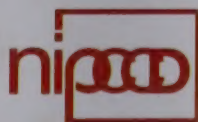
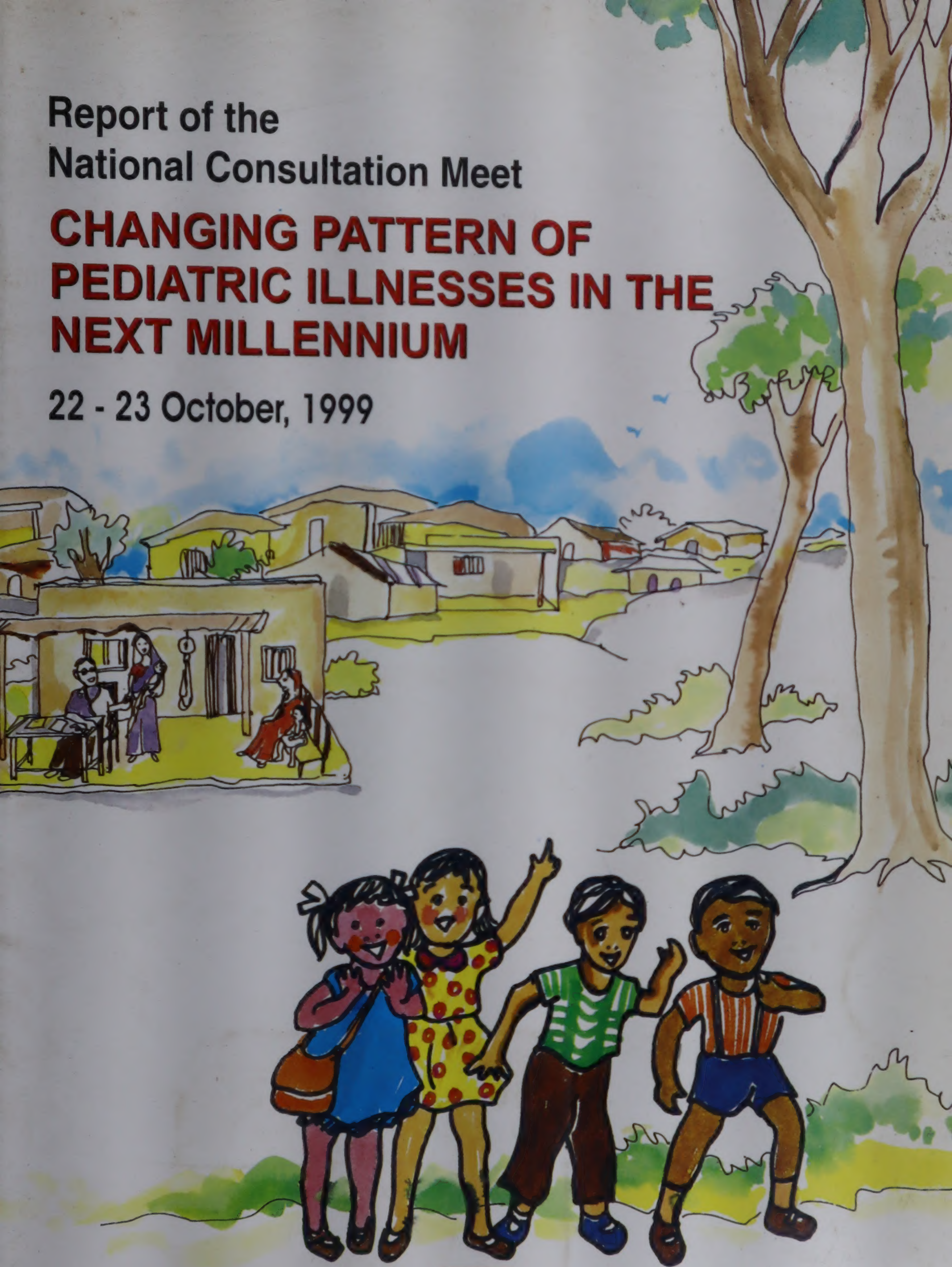


Report of the
National Consultation Meet

CHANGING PATTERN OF PEDIATRIC ILLNESSES IN THE NEXT MILLENNIUM

22 - 23 October, 1999



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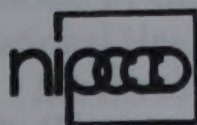
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**National Institute of Public Cooperation and Child Development, New Delhi
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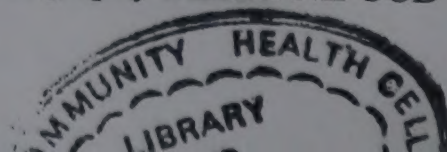
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I express my gratitude to Mr. S.K.Muttoo, Director and Dr. A.K. Gopal, Additional Director (MC) for encouraging the Health Unit to successfully organize the National Consultation Meet on Changing Pattern of Pediatric Illnesses in the Next Millennium. I also express my sincere thanks to Dr.D.G. Benakappa for graciously accepting to collaborate with NIPCCD to organize the National Consultation Meet. We are grateful to Mr. A. Sengupta, Secretary Health and Family Welfare, Government of Karnataka; Dr. Chandrashekar Reddy, Vice Chancellor, Rajive Gandhi University, Bangalore; for their thought provoking addresses which paved way for further deliberations.

I am obliged to our eminent resource persons – Dr. T. Jacob John, President, Indian Academy of Pediatrics; Dr. V.R.Pandurangi, Founder Emeritus, Secretary General of Commonwealth Association for Mental Handicap and Development Disabilities; Dr. A.K. Chakraborty, Executive Director, National Tuberculosis Institute, Bangalore; Dr. Nandini Mundkur, Chief Executive, Children's Hospital, Bangalore; Dr. P.K. Misra, Professor of Pediatrics, KG's Medical College, Lucknow, Prof. A. Parthasarathy, Retired Professor of Pediatrics, Madras Medical College; Dr. S.L. Mandowara, Professor of Pediatrics, R.N.T. Medical College, Udaipur; Prof. Sunil Gomber, UCMS & GTB Hospital, Delhi, Dr. J.V Singh Professor Upgraded Department of Social and Preventive Medicine, Lucknow; Dr. Amitava Sen, Professor and Head, Department of Pediatrics Institute of Post Graduate Medical Education and Research, Calcutta; and Dr.R.K. Satapathy Pediatrician, Berhampur, Orissa for their valuable presentations on vital issues relating to changing pattern of pediatric illnesses in the country which culminated into formulating meaningful recommendations.

I also acknowledge the substantial contributions of policy makers, administrators, representatives of NGOs and participants from varied disciplines such as pediatrics, community medicine and social sciences. Sincere thanks are accorded to the members of the Technical Resources Group (TRG) on Women, Children and AIDS who have reviewed and finalized recommendations of the Group.

Finally I wish to acknowledge the support of my colleagues in Child Development Division and in particular Mrs. Shanta Gopalakrishnan and Mrs. Manju Khanna as also Dr. Vanita and Dr. Manjula, from Indira Gandhi Institute of Child Health, Bangalore in organizing the consultation meet. The secretarial assistance of Ms. Deveshwari and Ms. Kiran Mehta is also acknowledged. Last but not the least, I am thankful to all those who participated in this consultation meet and contributed to the discussions which are reflected in this report.

Dr. Dinesh Paul
M.B.B.S., M.D., MAMS
Joint Director (CD Division)
National Institute of Public
Cooperation and Child Development

SECTION - I

Welcome Address

Shri S. K. Muttoo Director, NIPCCD, New Delhi

It is a great pleasure for me to be here to welcome you all to this "National Consultation Meet on Changing Pattern of Pediatric Illnesses in the Next Millennium". This Consultation, organised by NIPCCD in collaboration with Indira Gandhi Institute of Child Health, has been the fruit of discussions Dr. Benakappa and I had sometime ago. As some of you may be aware, Dr. Benakappa has been Vice-Chairperson of NIPCCD.

India is blessed in that it has one of the largest publicly funded child development programmes in the world. There is no other country in the world with such an extensive network for delivery of child development services. The challenge is to utilise this network to work for child development in which pediatric health becomes one of the important components. If we are able to utilise this network to ensure, for instance, early detection of disability and management of five most common childhood diseases, we can make a great impact on child development, child survival and investment in the human resource capital of the country.

I thank the resource persons, our delegates and the distinguished gentlemen sitting on the dias for being with us. We have got a very good response to this Consultation; in fact it far exceeds our expectations. This fantastic response shows the high level of expectation from this Consultation. With these words, I welcome you all, once again, to Bangalore and to this Consultation.

Inaugural Address

***Shri A. Sengupta, Secretary, Health & Family Welfare, Government of Karnataka
Bangalore***

It is an honour for me to be here and to participate in this session of this Consultation. It is undoubtedly a pleasure to be here with the distinguished pediatricians and specialists in health care, towards the end of the 20th century. When we look to the next century or next millennium, the fact that millions of children globally, and very definitely in India, would be susceptible to childhood which leads to grave illness or even to death before the age of five is something that concerns all of us. Despite the efforts made in these areas, as a paper circulated mentions, India ranks 139th on the Human Development Index. As a bureaucrat from Karnataka I must say in Karnataka, within the country, we are little better off but that doesn't mean anything because all that we may end up at up 131st instead of 139th or some figure like that, and it does not make much difference. For those of you who have come from all other parts of the country, some States have done well and some have done, frankly not very well which is a matter of concern for us at this point of time. I am not sure in which direction finally the consultation, will go, though the papers are with you, how much of it will be public health and how much towards issues related to clinical treatment, both are equally important.

If we look at macro issues, this country has the largest immunisation programme in the world going on although there are tremendous gaps in it. In general terms, we have IMR of 71 from 1997 when the RCH program was started – a kick start to an existing programme as it were. With a sum of US\$ 238 million it was felt that some additional children would be brought under the immunisation programme. But as we get into pulse polio programme which is reasonably successful, we are now worried that having concentrated on polio and being able to do it as a one time effort, one shot effort every year, we have forgotten the routine immunisation. This is now a concern that Government of India and State Government have now come to realise.

We are looking at pediatric illnesses in the next millennium but then we need to take stock of what will remain with us. Obviously poverty and hunger resulting in malnutrition will be first problem to be taken care of. If we cannot improve nutritional content for our children and we cannot have IMR at par with internationally acceptable levels. If you cannot give safe drinking water we will certainly have diarrhoea and all the stomach-related ailments. No medication in rural areas can substitute safe drinking water. These areas have been addressed in the past, but I am sure this consultation will also look at these aspects also. New areas of morbidity HIV, which is i.e. relatively of recent origin, infantile diabetes, hepatitis, child tuberculosis that is accepted as biggest killer in the country - are issues that do not have automatic solutions. Today we have advertisement about vaccination for chickenpox yet we know that one shot of injecting vaccine does not take away the possibility of chickenpox recurring; we know that new strains have led chickenpox to occur for the third, fourth or fifth time in human beings. If these strains have to be looked at or these illnesses have to be worked, the effort has to be indeed enormous. I don't know whether the funds that we are putting into the programme other than the RCH programme of Government of India is really sufficient. It is also difficult for us to probably find funds specifically for pediatric ailments. But when we look at the larger issues of poverty and public health it has its impact on paediatric illness.

I hope this consultation would take place into cognizance that a third of our population is still without sufficient food without which, efforts at child nutrition and child health would be at a disadvantage and problems would continue to grow. But we need not be obviously despondent over where do we go from here. I am sure, with all of you, experts in the field from all over the country gathered here today, some headway will be made in that direction.

Thank you all very much.

Introductory Remarks

Dr. T. Jacob John, President, Indian Academy of Paediatrics

Dr. Chandrashekar Shetty, Shri. S.K. Muttu, Dr. Dinesh Paul, Shri Sengupta, Dr. Pandurangi, Dr. Benakappa and my dear colleagues, friends, ladies and gentlemen. I am very pleased to be a partner in this Consultation looking ahead into the next millennium. I am representing the Indian Academy of Paediatrics of which Dr. Benakappa was the national president some years ago. Some members and some senior leaders are present here and we as an academy we are with NIPCCD in this voyage.

The question of whether we are going to look at the clinical issues or public health was voiced earlier by Shri Sengupta. Nothing is going to change on 1 January 2000 but we need to think differently and plan. I would recommend that we keep three items under our thinking cap: firstly, we need a change in the mode of thinking the paradigm from illness model to developmental model. Paediatrics specialty looks at illness certainly for early diagnosis, cure and prevention but also looks at the growth and maturation of the individual child and development of that child's physical, mental, social adjustment and spiritual realms of development. It is not growth; growth is natural, maturation is natural, we have been thinking of maturation when we spoke of growth and development, we need to distinguish these issues. So, there is need to rise from a disease-focused thinking of the future of the health of the child to a development oriented approach. The fundamental basis of democracy is that each individual is precious and that every individual is equal to another.

The second shift in thinking that we need is from project to programme. India is a fantastic storehouse of innumerable, highly successful model projects. In fact, the whole world looks at India, the shelves of universities for dissertations and various storehouses of documentation of successful projects in this country. Many of us do not know that

more American students get doctoral degree on Indian work than Indian students themselves. But when we come to shifting, upscaling from project to national programme, we fall short. For making a programme futuristic in child health, we must link illness, care and public health.

Health care and public health must to be linked together. As long as they stand separate and isolated, public health we will not improve. Medical education must be linked to both health care and public health otherwise our medical schools will essentially become museum pieces. They teach from textbooks of yesteryears, which does not require any imagination. You must have read about the report of the Indian medical school performance in a national medical journal two or three years ago, quite a dismal picture indeed. So we need to focus on research based on our problems in health care, public health and medical education. If these can be combined together into a national programme than we have every hope that the next millennium will be better than the current period.

The third and final point I want to make is that we must shift from externally - oriented thinking to self-reliant, self-motivated indigenously-designed, practical and goal-oriented programme for our country. If we look back, EPI, diarrhoea control, ARI control, CSSM, RCH, polio eradication, leprosy eradication, etc. a number of these projects have been well designed by international experts in terms of the objectives, methodology of performance and evaluation.

They have done with good intention and good faith we have taken them at face value and done reasonably well in many of this. In the process of conducting these projects we have forgotten that we have brain. We simply learn what is taught and we perform what have been asked. We tick off the checklist of evaluation and feel good, and then close this notebook to learn the new programme. This has been going on, let this go on, but let us learn, at least now, that we must think for ourselves and set our goals. We must prioritise our issues. Whether we do IMCI or not, RCH or not, you these programmes are fund-driven. People are running in with these programmes because RCH

comes with huge funding. We have to stop and think, what is our goal, is it just spending money? Even in the newly launched AIDS Control Programme, our goal is to spend \$ 100 million that has come with it and we will spend it, at least 75 percent of it. Unfortunately we do not learn that it is ultimately our money, which is lent to us, it is a soft loan and we have to pay back. Globally, developing countries are now paying 18 percent of their gross income through exports in debt reimbursement, it has grown from 11 percent about 10 years ago. So this money is not coming without strings attached.

Self-reliance will shift the focus from spending the money, not for the sake of keeping the projects well evaluated, but the goals achieved. From disease model to development model; from projects to programme; from externally-oriented ideas to self-reliant ideas – if these three can be achieved in our thinking on the changing pattern of paediatric illnesses and development and if we can bring some of these issues into the forefront then I am sure, this Consultation will be a successful one and what happens as a result of its report of the Consultation will be a tremendous contribution to national development. I once again thank Dr. Benakappa for giving this opportunity and to Dr. Dinesh Paul who chased me out, wherever I was, and brought me here. Thank you very much.

Introductory Remarks

Dr. V.R. Pandurangi, Founder Emeritus Secretary General of Commonwealth Association for Mental Handicap and Development Disabilities (CAMHADD)

Distinguished members on the dias, distinguished members of the medical profession, ladies and gentlemen.

At the outset, I would like to thank Dr. Benakkappa, Director, Indira Gandhi Institute of Child Health for giving me an opportunity to say a few words on NGOs and WHO Global Partnership Initiative for Promotion of Health and Development. There are 188 NGOs in official relationship with World Health Organisation. Our organization i.e. Commonwealth Association for Mental Handicap and Development Disabilities (CAMHADD) is one of the 188 NGOs working with WHO. We are partners in the area of WHO Global partnership initiative to promote health and to prevent disabilities in the community. This concept of health promotion is a process of enabling individuals to avail opportunities to live their lives to the full, as well as avoiding illnesses and preventable disabilities through strengthening their capacity to control, improve and maintain their health.

Health is not just absence of disease. According to WHO, health it is a state of complete mental, physical and social wellbeing and not merely absence of disease or infirmity. The first formal commitment to health promotion at an international level was made at the first international conference resulted in the 'Ottawa Charter,' this is called Ottawa Charter published by WHO.

The five main strategies on which health promotion has been based since Ottawa charter was made are: building health public policy; creating supportive environment; strengthening community action; developing personal skills and reorienting health services towards promotion and prevention. This charter has also highlighted many aspects of success stories - successful cooperation between private and public sectors,

government and NGOs, lay persons and professionals, etc. It has also inspired a number of successful WHO projects including 'healthy cities, villages and municipalities'; 'health promoting schools' and 'health islands'.

Following the first conference, the second conference was held at Adelaide at Australia in 1958. This conference also highlighted the importance of health promotion. The Adelaide conference identified four key areas for health of women – the world's primary health promoters; food and nutrition – ensuring adequate amount of healthy food for all; attending to tobacco and alcohol dependence – the major health hazards; and creating supportive environment so that health is nurtured and protected.

Following the second conference, the third one was held at Sweden in 1991. This conference also grouped strategies for environment change in support of health under seven headings - policy development; regulation; reorientation of organisation; advocacy; building alliance; enabling and mobilising community.

The last one was held in Jakarta in 1997, which made an important declaration, and we are proud to be one of the partners in partnership programme. The WHO's Partnership Report on Health & Child Health (1983-97) shows that there is no change in number of neonatal deaths between in 1983-97, why is this so? I would like to draw your attention to this issue. When the technologies have advanced, when there are comparatively more medical colleges, more resources, why this is still a major problem in the developing countries. When we entered into partnership for this programme we saw there is fragmentation of programme activities in different programmes e.g. WHO has got many divisions in maternal and child health care. Similarly, Ministry of Health, World Bank, etc. also have many divisions. There is fragmentation of programme and there is no coordination and cooperation between the various divisions or organisations. This was highlighted in our statement to the executive body of WHO last year. Based on this, WHO has come up with a new concept 'partnership towards unity in health for social accountability of medical schools and medical colleges'. This is where we are making an effort to bring together all the health personnel in unity to tackle this problem.

Next month, we are meeting in Bangalore with help of WHO to develop the concept of partnership towards unity in health and Rajiv Gandhi University is playing a very major role for which we are thankful to Dr. Shetty. I conclude and thank once again Dr. Benakappa for giving me this opportunity to share my viewpoint with the dignitaries present here.

Thank you.

Presidential Address

Dr. Chandrashekar Shetty, Vice Chancellor, Rajiv Gandhi University, Bangalore

Shri Sengupta, distinguished dignitaries on the dias and friends.

The speakers before me, all four of them have touched upon very important issues that concerns child development in the next millennium. Shri Sengupta talked about HDI – it is quite naturally the development index of the life expectancy at birth, educational attainment of the people, buying capacity of the people for their daily needs to pay for the services like education and health services. They are adding more to GDI, like empowerment of women, gender empowerment measure (GEM), and one might add, rural development index too. After considering all these aspects in education, health and nutrition certain priorities have been set.

It is now a almost 53 years after independence and we also have National Health Policy. When we look back since, 1983, we have 'n' number of projects yet we are far from our goals. That is why in the HDI the last one is being added as Human Governance Index, which depends upon the political will and bureaucratic will, and most important for us, the *professional will* of all of us concerned with the development of the child.

Lastly the most important of all these integrated activities, is the *community will*. Unless there is active participation of the community, especially in the programmes of the government, we can never be successful. There must be a close link and integrated approach, otherwise we will be unable to achieve our objectives may it be general or specific objective.

When we talk about priority sector, mother and child in the age group 0-15 years has been identified as first. All the problems starting from the intrauterine period, birth, neonatal period upto 15 years, including genetic, non-genetic and other factors like safe

motherhood have been identified as priority areas. Unfortunately, when it comes to implementation, there is a 'missing link', which Dr. Pandurangi has aptly suggests is the lack of coordination among the various agencies.

Dr. T. Jacob John talked about role of medical education. He has rightly said that the mode of education has to change from disease-orientation teaching to developmental orientation. The development includes managing diseases, education, health, nutrition and all round development of child. Overall development in education, health and nutrition could be taken as parameters for the development of not only society, but also a nation.

Another aspect referred by Dr. Pandurangi is the social accountability of health care personnel what WHO terms as priorities of interface of health care/medical practice and medical education. Our medical education is supposed to look after the primary, secondary or tertiary health care of the people. This is where we need to concentrate as majority of our graduates land up into government health systems or medical practice. The general practitioners have to develop adequate skills. Development of knowledge in quite easy these days; knowledge has become virtual with increase in globalisation. With shrinking time and space and almost disappearing boundaries, knowledge has become virtual. These days we talk about virtual universities, virtual teachers etc. but development of skills is very necessary as today we have skill-oriented problems.

Then comes research. Research for the sake of research is unwarranted for any developing country and for us. It should be something to do with development of society. Somewhere we have to concentrate on community-oriented research programme also.

When it comes to medical education, somewhere it has been very theory-oriented or specialist oriented. All our teaching and training has been specialist-oriented in the last 50 years. What is required is teaching problem-based learning. We need to change our attitude and mode of teaching, to job oriented teaching in respect of medical, dental or para professionals. To bring in this change in the teaching faculty is very difficult. But

old boys are difficult to change. There is a mental block that exists and the age-old system of classroom teaching with no group discussion is hard to change. But some revolutionary process has to take place and change has to be adopted in the teaching and learning process to fulfil the unmet needs of society. By 2020, we should be able to achieve this.

We have two kinds of education: higher education in terms of general and technical education and professional education such as medical, dental and para-medical education. We should have a progressive positive policy for development of good quality manpower, the kind of manpower which works towards community cause; we need that kind of training for developing such kind of manpower for the universities. It is an investment for future development of persons, society and nation. It is a kind of catalyst for socio-economic change. So, the health system and medical education has to go hand in hand, these are two yardsticks/parameters of development of society and human beings. Keeping this in mind, the social accountability is described as the relevance of entire health system. Our health system depends on the quality of service with improved quality of life. The parameters of development of a nation is always measured by quality of life of its people.

Third, is cost effectiveness. Hi-tech facilities are available in the cities for the rich people but not to the common man. Unless it is made cost effective it cannot make an impact on the common man. If common man cannot buy these services, somebody has to pay for him. Who is this somebody? It may be government, non-governmental donor agencies, charitable trusts, etc. He should not be denied of a quality service just because he is born poor in any country. He has a right to ask for quality service. It is called right to rightful medical services. It is our responsibility to provide that kind of quality service.

Last one is equity of service. It is not enough to have one excellent hospital in Bangalore. It is not available for every person in this country. We do have social obligations and social accountability in respect of health care. But to achieve this, the important link is an effective management information system. Unless we have an

effective MIS which coordinates all the people concerned with the development of the people or health of the people, we will never be able to offer equity of service to our people.

You all have assembled here today to take care of the health of the child i.e. development of the child. It is your priority area. Each one specialist in the field, you can plan out what you would like to achieve in the next year 20 years. There is adequate money with both government and NGOs and private sector. What is important is the integration of all those involved in the health care system and to give special emphasis whenever necessary. With increasing globalisation as already mentioned by earlier speakers, we can expect emergence of newer diseases and resurgence of older diseases as a result of lack of sanitation and safe water supply and we have to get ready to face it.

Neonatal care in the tertiary care has to be improved. It has been talked for 20-30 years and it exists only in theory. What is required is development in the field. What is required is coordination of between eye department, ENT department, Neurology department, etc i.e. among all specialities of pediatrics as its off shoot of this. It is the responsibility of pediatricians of teaching institutions to enthuse the students to have some kind of community orientation and to see that IMR, still birth is brought down.

I am happy to be associated with this Consultation. I have been associated with NIPCCD for over 15 years. I wish the Consultation a success and hope it comes out with practicable and implementable suggestions in terms of short-term, mid-term and long-term action plan that could be taken up in order of priority. NIPCCD can act as the agency to coordinate this.

I once again thank Dr. Benakappa for giving me this opportunity.

Vote of Thanks

Dr. D.G. Benakappa, Director, Indira Gandhi Institute of Child Health, Bangalore

Shri Sengupta, Dr. Chandrashekar Shetty, Shri S.K. Muttou, Dr. Pandurangi, Dr. Jacob John, distinguished participants, members of press and media, senior pediatricians from Bangalore and all other parts of the country.

It was my desire to have a National Consultation Meet on pediatric priorities and I expressed it to Shri S.K. Muttou, Director NIPCCD as vice-chairperson of the Institute. My desire has been fulfilled and I thank Shri S.K. Muttou for accepting my suggestion and selecting Indira Gandhi Institute of Child Health, which is yet in its infancy, for holding the National Consultation Meet.

Dr. Sengupta has very kindly accepted our invitation of delivering the inaugural address. Dr. Sengupta is the vice-chairperson of this Institute. He has taken keen interest in the development of this Institute. Thank you very much Sir, for being with us in spite of your busy schedule.

Dr. Chandrashekar Shetty as Vice-Chancellor of Rajiv Gandhi University has given a new dimension to the university and its activities. I am seeing him for the past 15-20 years after taking over as university chief. He is keenly involved in all academic activities. He is with us today, thank you for being with us.

Dr. Pandurangi is a partner with us. He is a well wisher of this Institute. His office is in the campus and he is always there to help us, whenever we ask for any suggestion. He has accepted our invitation at short notice and in spite of his busy schedule, has come and given his advice. Thank you, Sir.

Dr. T. Jacob John is a difficult man to get and I tried and tried to get him on the phone. He has taken so much trouble to be here. We chased him from Washington and

tomorrow he is going to Ahmedabad, we request him to give us six-month plan of his activities, so that we know where he would be when we need him. Thank you Sir for sparing you valuable time.

Shri S.K. Muttoo is with us; he has graced the occasion and has given his valuable ideas. I must admit NIPCCD is the biggest organisation actively involved in child health activities and there is no parallel organisation anywhere in the world of this nature. Thank you for being with us and sharing your views.

Dr. Dinesh Paul came here a day in advance and has helped us in many ways. I thank Dr. Usha Abrol Regional Director for staying with us in spite of her busy schedule. I also thank Shashi, Vice Chairperson, FPAI, Bangalore, Udaya T.V. and our hospital staff for working day and night for the success of this programme. I hope all of you have a pleasant stay in the city of Bangalore. I hope this Consultation is a great success.

SECTION - II

Background and Report

Introduction

Every year some 12 million children in developing countries die before they reach their fifth birthday, many during the first year of life. Seven in ten of these deaths are due to acute respiratory infections (mostly pneumonia), measles, diarrhoea, anaemia, malaria or malnutrition or a combination of these conditions. The projections based on 1996 analysis indicate that these diseases will continue to be major contributors to child deaths in the year 2020, unless significantly greater efforts are made to control them.

2. India is home for 375 million children, the largest number for any country in the world. This casts a great responsibility on the nation to bring up these children in the best possible way so that they become useful citizens. Unfortunately, 75 million children in India are still malnourished. Malnutrition remains a matter of serious concern particularly when India has the Human Development Index of 0.451 and ranks 139th in the world (Human Development Report 1998). The nutritional status of the people has been recognized as an important social development indicator because of its direct co-relation with the human development.

3. Health and well being are not isolated phenomenon. A number of socio-environmental factors directly or indirectly affect the health of people in a number of ways resulting in substantial changes in the morbidity pattern itself. Child being the most vulnerable has become a victim of factors affecting maternal health on one hand and changing socio-ecological factors on the other. Approximately 30 per cent of all newborns in India begin life with a disadvantage that of birth weight less than 2.5 kg. The percentage of underweight children, between 1-5 years, is also very high (68.6%).

4. The inter-play between the two most important significant immediate causes of malnutrition – inadequate dietary intake and illness - tends to create a vicious cycle i.e. a malnourished child whose resistance to illness is compromised, falls ill which reinforces malnourishment. Three clusters of underlying causes that lead to inadequate intake and

infectious diseases are inadequate access to food in a household; insufficient health services and unhealthy environment; and inadequate care for mother and children.

5. Caring aspect has assumed great importance in the recent times. Care is manifested in the ways a child is fed, nurtured, taught and guided and is the responsibility of the family and the entire community. Breastfeeding is associated with lower morbidity in comparison with artificial feeding, at all ages. In a study conducted in India, the average incidence of morbidity in breastfed infant was 4 episodes per child annually as compared to 14.4 episodes per child annually in artificially fed infants. Diarrhoea and vomiting occurred 5 times more frequently amongst artificially fed infants (66 episodes per 100 child months) than the breastfed ones (13.5 episodes per 100 child months). The caring behaviour such as feeding, protecting children's health, providing emotional support and cognitive stimulation for children and caring for and supporting mother are most critical for well being of children, our future generation.

6. The IMR in our country at 71 (1996) is still very far from the target that we had set to achieve by the year 2000. Even the targets related to child mortality are far from reach. The causes of death in the infants are still dominated by prematurity, respiratory infections, diarrhoeal infections of the newborn followed by cord infection and birth injury. Untrained personnel are still attending fifty per cent deliveries. The use of ORS by mothers even after so many years of advocacy is just 33 per cent.

7. The prevalence of vaccine preventable diseases in our country has declined to a large extent. However, of the six vaccine preventable diseases, measles is still a concern for most regions in the world including India. It is estimated that some of the new emerging and re-emerging infectious diseases will show epidemic trends. The most dramatic example of a new disease is AIDS caused by HIV. Epidemic of food borne and water borne diseases has already hit the industrialized countries. Several new strains of bacteria causing diarrhoea have been reported. The threat of a new global influenza pandemic is increasing. Several diseases, which were previously easily controlled by chemotherapy and antibiotics, have developed anti-microbial resistance and are appearing

Box 1

Child in India : Constitutional Provision

Article 15	<i>..... not discriminate against any citizen.. (3) nothing in this article shall prevent the State from making any special provision for women and children.</i>
Article 21	<i>..... no person shall be deprived of his life or personal liberty</i>
Article 23	<i>Traffic in human beings and beggar and other similar forms of forced labour are prohibited</i>
Article 24	<i>No child below the age of fourteen years shall be employed to work... in any other hazardous employment.</i>
Article 39	<i>....the tender age of children are not abused and that... to enter avocations unsuited to their age or strength.</i>
Article 42	<i>.... for securing just and humane conditions of work and for maternity relief.</i>
Article 45	<i>.... free and compulsory education for all children until they complete the age of fourteen years.</i>
Article 47	<i>.... raising of the level of nutrition and the standard of living of its people.</i>

in epidemic form. Despite the emergence of new diseases in the last 20 years, there is still a lack of commitment and resources that is necessary to detect and stop their spread. The "new diseases" such as dengue haemorrhagic fever, AIDS, Hepatitis B and C raise important public health concerns.

8. Tomorrow's children face a "new morbidity" of illnesses and conditions that are linked to social and economic changes, including rapid urbanization. These include neglect, abuse and violence, especially among the growing numbers of street children.

9. It can be summarized that the health problems of children in the next millennium would pose a challenge to planners, administrators and the community. This gigantic task required to combat the threats to healthy children will require a clear strategy and collaborative effort of Government, voluntary organizations, professional associations and the people. There is an immediate need to discuss the pattern of pediatric illnesses in the next millennium and intervention strategies to tackle them. The National Institute of Public Cooperation and Child Development therefore proposes to organize a '**National Consultation Meet on Changing Pattern of Pediatrics Illnesses in the Next Millennium from 22-23 October, 1999**' in collaboration with Indira Gandhi Institute of Child Health (IGICH) at the premises of IGICH, Bangalore.

Objectives

10. The objectives of the meet were:

- i) to review and discuss the emergence of new and resurgence of old diseases of children of public health importance in the Indian context;
- ii) to suggest modifications required if any in the National Immunization Schedule in the light of pediatric illnesses in the next millennium;
- iii) to develop strategies for Integrated Management of Childhood Illness;

Box – 2

Child in India : Policies and Action Plan

1974	National Policy for Children
1983	National Health Policy
1986	National Policy of Education
1987	National Policy on Child Labour
1993	National Nutrition Policy
1996	Communication Strategy for Child Development
1991-2000	National Plan of Action for SAARC Decade of the Girl Child
1992	National Plan of Action for Children
1995	National Plan of Action on Nutrition
2000	National Population Policy

- iv) to identify the intervention and training strategies;
- v) to discuss the attainments of child development targets as laid down in National Health Policy and National Plan of Action for Children and to suggest future targets for achievement by 2020.

Participants

11. About 91 participants comprising pediatricians, medical professionals from the field of community medicine, specialists, psychiatrists, social scientists, government officials and leading NGOs attended the Consultation Meet.

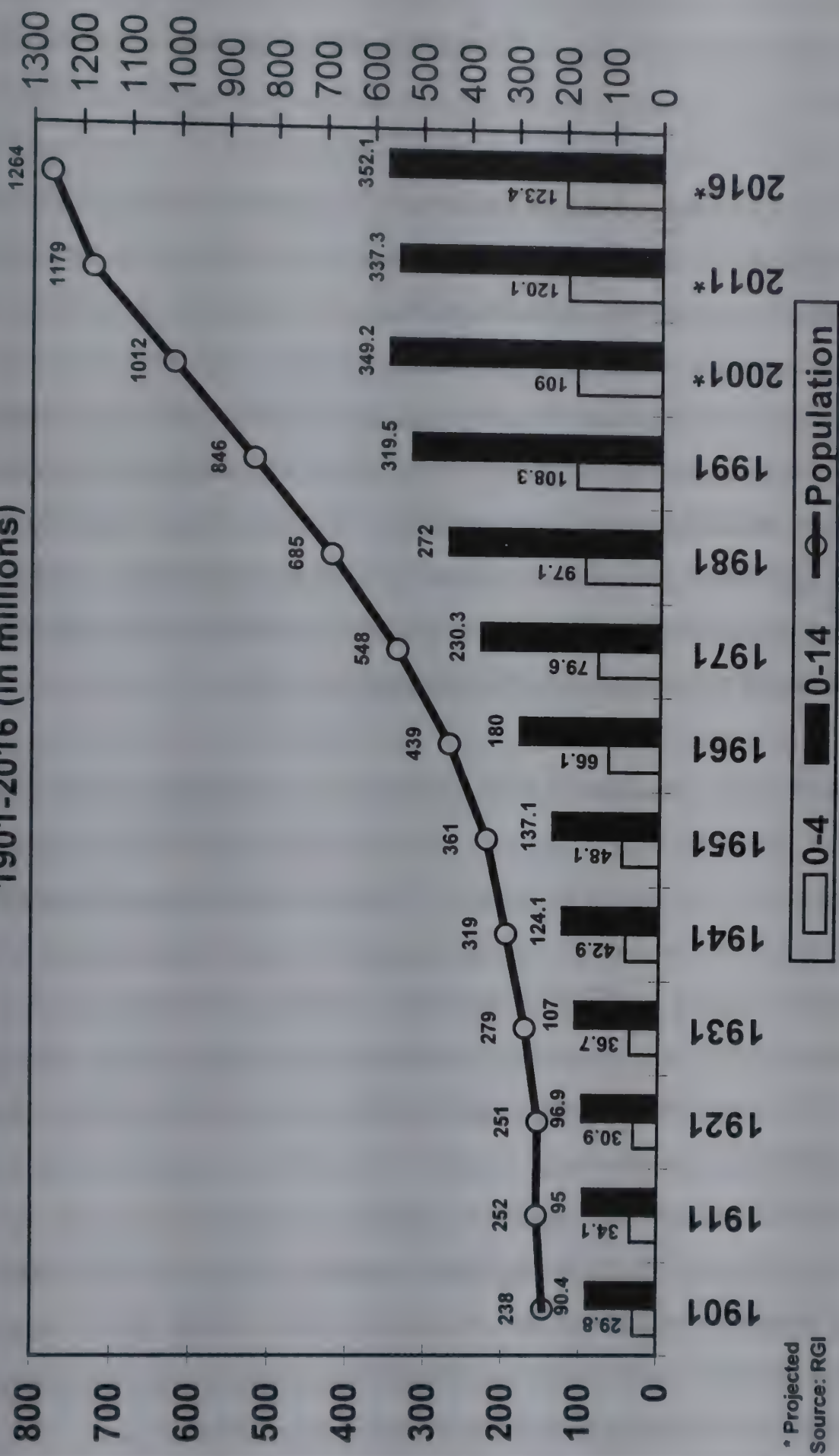
Documentation

12. The documentation for the National Consultation covered the following:
- i) Pediatric priorities for the next millennium;
 - ii) Attainment of child health targets of the National Health Policy;
 - iii) Unmet child health agenda with special reference to children specially children in difficult circumstances;
 - iv) Capacity building of caring community with perspective to neonatal priorities in the next millennium;
 - v) Child care practices including home remedies; and
 - vi) National Immunization Schedule: A review in the light of pediatric priorities

Inaugural Session

13. The Inaugural Session commenced with a prayer song followed by a welcome address by Shri S. K. Muttou, Director NIPCCD. Dr. Dinesh Paul briefly outlined the rationale and objectives of the Consultation Meet. In his inaugural address Shri A. Sengupta, Secretary, Health & Family Welfare Department, Government of

Total Population & Child Population in India 1901-2016 (in millions)



* Projected
Source: RGI

Karnataka stressed on the role of nutrition and access to safe drinking water as an important step towards achieving targets set for child health. He urged, unless massive efforts are made to bridge the gap in the nutritional requirements, our entire endeavour will be a waste.

14. Dr. V. R. Pandurangi, Founder Emeritus and Secretary General, CAMHADD in his remarks stressed that for health promotion there is a need for a good public health policy, supportive environment, capacity building of caregivers, developing skills of communications and reorientation of medical education. He talked of the various international commitments towards health promotion. The most important among these he mentioned was the Jakarta conference. The Jakarta conference was on 'partnership towards unity in **health** for social accountability'. There is a need to put in concerted effort to bring together all the health personnel in unity to tackle health problems. In the present trend of fragmentation of programmes, the coordination and cooperation of all concerned, is missing and this needs to be addressed to urgently.

15. Dr. Jacob John, President IAP in his remarks voiced that pediatrics speciality though looks at illness for early diagnosis, cure and prevention but it should focus on child's physical, mental and social development. He stressed that from a diseased focused thinking of the future of the child to a development of an individual is the call of the day. There is a need for making programmes futuristic in child health. There is also a need to make programmes self reliant, he added. Self-reliance will shift the focus from spending the money not for sake of keeping the projects well evaluated but the goals achieved too. He therefore reiterated on the need to shift from disease orientation to individual development model; project to programme planning; externally directed to self-reliant, self-motivated, indigenous, practical and goal oriented programme. He further added, that medical education needs to be revamped to deal with public health care. Development of adequate skills to manage diseases is a must, he added. Participation of the community he voiced is very crucial for success of any effort.

16. In his presidential address Dr. S. Chandrashekar Shetty urged that there is a need to re-look at the National Health Policy. He felt a Human Governance Index, which relies on *political will* needs to be developed. *Community will* he opined is equally important for success of any programme. Lack of coordination of all those involved in the implementation of the programme is the 'missing link', which needs to be strengthened. He voiced that researches should be done not for the sake of conducting a research but it should be community oriented for the development of the society. He further added that there is a need to revamp medical education, its mode of teaching, classroom orientation, etc. to community-based and problem-based teaching-learning process. For this he added there is a need to change the mind set of teaching faculty of medical colleges. He further reiterated that production of quality manpower is essential to promote community health. Health system and medical education he opined should go hand in hand. He further stressed on cost effective as well as equity of services, integration of those involved in health care system and an effective MIS to strengthen the programmes; and urgent need to provide safe drinking water and sanitation facilities to deal with emergence of new diseases, and resurgence of old ones. A vote of thanks was proposed by Dr. D. G. Benakappa, Director, IGICH, Bangalore.

Technical Sessions

17. The Technical Session started with a presentation on 'Fifty years of Pediatrics in India' by Dr. D. G. Benakappa, Director, Indira Gandhi Institute of Child Health, Bangalore. He voiced his concern about the meager progress in the field of child health in the last fifty years. He added that the challenge facing the pediatricians and other medical professionals are many, emergence of new diseases – like pediatric AIDS, Hepatitis, MDR TB, drug abuse and resurgences of old diseases – like malaria, TB, plague, cholera, etc. But even bigger challenge facing the medical professionals is the increasing magnitude of problem of child abuse and child labour which needs expert handling. He recommended reorientation of medical education to equip the professionals to deal with problems of children in difficult circumstances.

18. Dr. Dinesh Paul, Joint Director NIPCCD in his session on 'Attainment of Child Health Targets of the National Health Policy' reviewed the health status of children in India on the basis of direct indicators such as IMR, preschool child mortality, percentage of babies with birth weight below 2500 gms, life expectancy at birth and immunization, and indirect indicators such as crude birth rate, crude death rate, growth rate, pregnant mothers receiving antenatal care and deliveries conducted by trained birth attendants. He hoped that the newly launched Reproductive and Child Health Programme would help in bridging the gap that presently exists between the child health goals and its attainment. He voiced his concern over the unnecessary human loss on account of vaccine preventable disease, which could be easily prevented. He said that the prerequisite for hundred percent coverage of immunization are – adequately trained manpower, organized system of coordination of immunization services and intensification of efforts in districts with low coverage. He stressed on the need to identify few crucial indicators for monitoring and assessing MCH services. They, he felt could be IMR, prenatal mortality rate, birth rate and death rate, immunization status, pregnant mothers receiving antenatal care, indicators related to monitoring of HIV/AIDS, incidence of TB and prevalence of moderate and severe malnutrition. He further strongly recommended the need for revision of National Health Policy. There is also an urgent need for a National Population Policy, he added.

19. Dr. A. K. Chakraborty, Executive Director, National Tuberculosis Institute, Bangalore dealt with the topic titled 'Pediatric Tuberculosis at the Door-steps of the Next Millennium: The Epidemiological Perspective'. He presented the data on the epidemiological trend of tuberculosis in general and the situation in the pediatric age group in particular. He hoped to develop some plausible hypotheses on issues, which are germane to the problem, in order to identify some areas for possible action. He voiced that India is identified as a country of high transmission and inadequate decline as far as tuberculosis is concerned, a situation which it shares with the sub-saharan countries (annual risk of infection (ARI) 1-2.5 per cent, annual decline 0-3 per cent). He urged that the situation merits special concern, since the already diagnosed cases continue to constitute a major proportion of the prevalence ($2/3^{\text{rd}}$) year after year. As long as the

above situation of a supposedly 'steady state' is allowed to continue, infection transmission in children may not decline sufficiently. He suggested need for further studies to develop diagnostic criteria in children as well as in achieving better definitions of area-specific risk groups. These he added could be further developed into action-oriented agenda under the national programme.

20. Dr. T. Jacob John dealt with the paper on 'Pediatric Infectious Diseases in the Next Millennium: Prospects of Prevention and Control'. He voiced that a large number of tropical infectious diseases affect children, they include typhoid fever, shigellosis, tuberculosis, helminthiasis, cysticercosis, malaria, kala azar, Japanese encephalitis, dengue fever, etc. He voiced that though there are national programmes to control some of them, none of them seems to have declined in incidence or prevalence. He viewed that India has not efficiently linked health care and public health. Nutrition, hygiene, medical care and immunization are four pillars for achieving 'Health for All', he added. But he voiced his concern about the pillars being weak. He recommended inclusion of newer vaccines against Hepatitis B, congenital rubella syndrome and haemophilus type B meningitis etc.; strengthening of referral system to rectify deficiency in the medical care system; building up of the calorie deficiency through creating nutrition awareness and provision safe drinking water and safe excreta disposal to all as corrective intervention to fight faeco – orally transmitted infectious diseases. He further recommended health care and public health must be linked at local level. Microbiology diagnostic support services must become available within every district.

21. Dr. Nandini Mundkur in her presentation on 'Unmet Health Agenda with Special Reference to Children and Difficult Circumstances' voiced her concern about children of slums, the most deprived. Adolescents among them she added, grow in unprotected environment exposed to violence, sexual harassment of women, beaten and growing in hunger. Fear, emotional out-bursts, depression, poor self image, impaired relationship, increased suicidal tendencies were the major health problems that existed in these children, she observed. India with 20 per cent of its population as adolescents has no definite programme to offer to adolescents, she opined. She recommended that

adolescents have to be brought into ambit of our health programme. She added, that there is a need for a comprehensive policy for adolescents; enactment of child labour laws; targeting urban slum population as most vulnerable group; building family life education in all programmes for adolescents; and more coordinated effort from GO-VO – pediatrician – community to deal with issues related to adolescents.

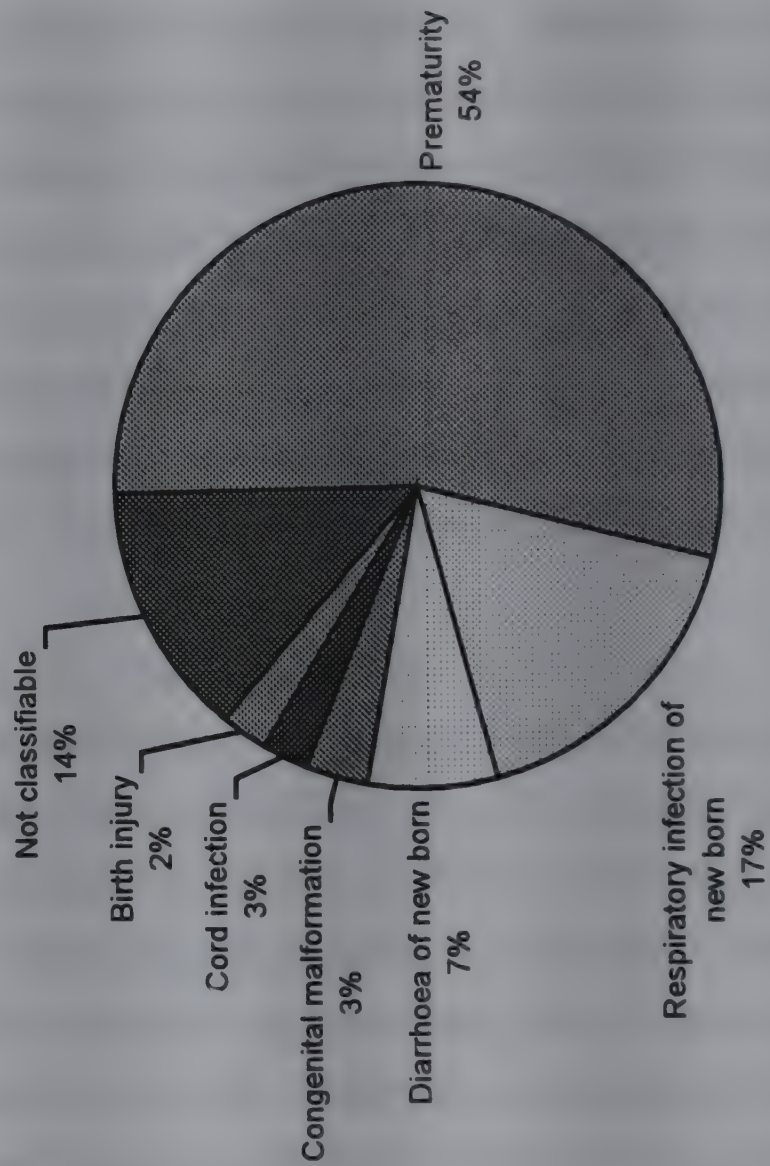
22. Dr. P. K. Misra Ex-Principal, King George's Medical College, Lucknow in her presentation on 'Child Care Practices Including Home Remedies' highlighted breastfeeding practices, immunization practice and care during diarrhoeal diseases. She touched upon the health seeking behaviour and adoption of home remedies for various diseases in children. She reiterated that traditional practices, beliefs and customs coupled with illiteracy, lack of awareness about health facilities their inadequate utilization, at times inadequate availability of health and medical facilities and poor health education make, poor practices important determinants of childhood (at all ages) mortality and morbidity.

23. Prof. A. Parthasarathy, Retd. Professor of Pediatrics, Madras Medical College, Chennai highlighted the modifications required in the next millennium's immunization schedule. He in his presentation, gave justification for introducing the new vaccines as also its dose and time schedule. He dealt with the necessity, safety and efficacy of the vaccines very carefully. He has suggested that the modified UIP schedule for India will need certain changes. They include i) Addition of 1st dose of Hepatitis B vaccine at birth along with BCG and OPV; ii) Addition of 2nd dose of Hepatitis B vaccine at 6 weeks along with DPT and OPV; iii) Addition of 3rd dose Hepatitis B vaccine at six months and 1st and 2nd dose of typhoid vaccine at 4 to 6 weeks interval; iv) Addition of MMR at 15-18 months; and v) Replacing DT with DPT 2nd booster at 5 years alongwith the 7th dose of OPV. He feels these modifications, if effected early, will go a long way in controlling dreaded complications due to Hepatitis B, typhoid, mumps, measles and rubella, in addition to the control of vaccine preventable diseases already targeted, poliomyelitis eradication, neonatal tetanus elimination and reduction in morbidity and mortality due to measles infection.

24. Dr. S. L. Mandowara, Professor of Pediatrics, RNT Medical College, Udaipur in his presentation on 'Additional Vaccines: A Need in the Next Millennium' recommends inclusion of Hepatitis B, MMR and typhoid vaccine in the National Immunization Schedule. The rationale for inclusion of Hepatitis B is that, India has 68 per cent cases of chronic liver disease and 80 per cent of all liver cancers. About one per cent of all deaths can be traced due to Hepatitis B infection. Also India has the second largest pool of carriers and if not prevented by active immunization then Hepatitis B will certainly be on the rise during next millennium. Though mumps and rubella are not associated with significant mortality, there is increasing awareness of congenital rubella syndrome. Hence, a dose of MMR vaccine is recommended at 15-18 months of age. The difficulty in diagnosis and the emergence of strains multi-resistant to antibiotics are the risk factors in typhoid fever. Delayed or unsuitable antibiotic therapy increases the number of complications, the mortality rate and cost of treatment. The typhoid vaccine (vi antigen) a single injection assures protection for three years. The other vaccines recommended include rabies, varicella, haemophilus influenza type B (Hib) and hepatitis but they are kept optional.

25. In his presentation Dr. Sunil Gomber, Professor of Pediatrics, University College of Medical Sciences and Guru Teg Bhadur Hospital, Delhi discussed malaria, dengue fever and hepatitis B in children and the challenges ahead for the next millennium. He while discussing the magnitude of problem of malaria reiterated that the plasmodium falciparum infection can be fatal. States such as north-eastern States, Andhra Pradesh, Bihar, Madhya Pradesh, Orissa, Karnataka and West Bengal are experiencing chloroquine resistance to plasmodium falciparum. The resistance to second line drug sulfa pyremethamine combination has been noted in north-eastern States, West Bengal and Karnataka. Regarding Dengue fever he said that there is an urgent need to continually update the knowledge on dengue syndrome to cope with challenges in future. He urged that the government ought to develop a policy to control hepatitis B. He recommended that Hepatitis B be included in the National Immunization Schedule. He

Percentage of Death by Causes Peculiar to Infancy, 1995



also briefly explained about the newly conceptualized Integrated Management of Childhood Illness (IMCI).

26. The paper on 'Rehabilitation Needs of Children in the Next Millennium' jointly prepared by Dr. R.K. Srivastava and Dr. J.V. Singh was presented by Dr. J. V. Singh, Professor, Department of Social and Preventive Medicine, King George's Medical College, Lucknow. He systematically analysed the health problems, its magnitude and its expected trends in the next millennium. He also highlighted possible new problems, which may produce disability. The disability that would emerge in the next millennium could be due to more use of information technology facility, scientific advances in human reproduction, use of newer diagnostic interventions; resistant infections and subsequent disability; war related childhood disability and natural disaster related childhood disability. He also highlighted the rehabilitation needs of a disabled child in the 21st century.

27. Dr. R. K. Satapathy, Pediatrician Behrampur, Orissa in his slide presentation illustrated the childhood diseases existing in Orissa which have vanished from most other States of India. He stressed that maternal malnutrition and birth of low birth weight babies as a root cause of childhood problems. The birth taking place at home in unhygienic surroundings by traditional birth attendants is another major problem in the area, he added. People rely more on home remedies and harmful practices which has led to loss of eyes, hearing and even life in many cases, he voiced. He said steps have to be taken to strengthen health services on the one hand and on the other hand, through awareness programmes help people get rid of the hospital phobia. He urged that we need to intensify our efforts to reach out to remote areas where still the problems of kwashiorkor, xerophthalmia, rickets, poliomyelitis, tetanus neonatrum, diphtheria, otitis media, measles, worm infestation, filariasis, sickle cell anaemia, cretinism, goitre, etc. are rampant.

28. Dr. Amitava Sen, Retd. Professor of Pediatrics, Institute of Post Graduate Medical Education and Research, Calcutta in his presentation on 'Capacity Building of Caring

Communities with Reference to Neonatal Priorities in the Next Millennium', highlighted that the inputs in newborn care have long been grossly inadequate. No target was set for neonatal mortality even in the National Health Policy. He urged that the time has come to review the situation of unreachd target, particularly in relation to the unreachd targets, every five years and reset future targets accordingly. He enumerated that the reasons of alarmingly poor neonatal care in the country identified by National Neonatology Forum are absence of national policy on neonatal – perinatal care; unsatisfactory training in newborn care; lack of accountability in neonatal care; poor management of health care; imbalance in resource utilization; lack of neonatal beds in health facilities; lack of transportation and referral services; poor record maintenance and lack of coordination. He voiced his concern over the 75 per cent deliveries taking place at home and more than half of them being conducted by traditional birth attendants (TBAs), family members and neighbours away from any health facility and beyond the reach of any trained person. He reiterated the need oriented changes proposed by National Neonatology Forum based on task analysis and competencies during undergraduate training to improve neonatal care.

Major Recommendations of the Consultation

- *A paradigm shift required in thinking from illness model to developmental one; from project to programme; and externally oriented thinking to self-reliant, self-motivated, practical and goal-oriented programme for our country. Health care and public health must be linked at all levels; similarly, there is a need to link medical education with both health care and public health.*
- *There is need to revamp medical education, its mode of teaching, classroom orientation etc. to community-based teaching-learning process.*
- *Existing health programmes have not made the desired impact due to fragmentation of programmes and lack of coordination and cooperation within the health system. Hence, there is a need to immediately revise the National Health Policy after eliciting opinions of various professional bodies such as IAP, IAPSM and IPHA etc.*
- *The Immunisation Committee of the Indian Academy of Paediatrics (IAP) should look at the National Immunisation Schedule and suggest modifications with respects to addition of new vaccine, dosage, schedule, etc. if any, keeping in view the epidemiological situation of the country.*
- *Within a district, all health care and public health initiatives and interventions must be integrated.*
- *Cost-effective health services to be made accessible to all urgently.*
- *There is a need for National Policy on Neonatal and Perinatal Care.*
- *There is a need for a comprehensive policy on adolescents.*

Modifications Suggested in the Immunisation Schedule

The modified UIP schedule will require following changes:

- *Addition of 1st dose of Hepatitis B vaccine at birth alongwith BCG and OPV;*
- *Addition of 2nd dose of Hepatitis B vaccine at 6 weeks along with DPT and OPV;*
- *Addition of 3rd Hepatitis B vaccine at 6 months and 1st and 2nd doses of typhoid vaccine at 4 to 6 weeks interval;*
- *Addition of MMR at 15-18 months; and*
- *Replacing DT with DPT 2nd booster at 5 years alongwith the 7th dose of OPV.*

Recommendations of the Consultation

I Concept of Health Promotion and Care

- i. A paradigm shift is imperative in the thinking from illness model to developmental model; from project to programme; and externally oriented thinking to self-reliant, self-motivated, practical and goal oriented programme for our country.
- ii. Paediatric speciality should not only look at the illnesses of the child but also monitor the growth and overall development of the child.
- iii. Health care and public health must be linked at all levels; similarly, there is a need to link medical education to both health care and public health.
- iv. Within a district, all health care and public health initiatives and interventions must be integrated.
- v. Social accountability of health care is an essential component for effective implementation of health care.
- vi. Social accountability should be built into in the health system at all levels.
- vii. Strategies to promote health promotion should include building public health policy; creating supportive environment; strengthening community action; developing personal skills and reorienting health services towards promotion and prevention. Similarly, there is a need to assess the situation of child development in India.

- viii. There is a need to develop a human governance index (HGI), which relies on political will of the people. Similarly, there is a need for developing a child development index (CDI) too, to assess the situation of child development in India.
- ix. Medical professionals from the teaching institutes should be involved while formulating any new programmes.
- x. About 50 percent of the funds of all projects should be earmarked for follow-up of the programme.
- xi. Effective monitoring and evaluation system (MIS) for improving the quality of health services in the country is very essential.
- xii. Involvement of male is essential for success of any programme as he is most often the decision maker in the family.
- xiii. For being accessible to all health services have to be cost-effective.
- xiv. Research should be taken up not for its own sake but for the betterment of the society.
- xv. There is no substitute for safe drinking water and all efforts should be made to make this possible.

II Medical Education

- xvi. There is need to revamp medical education, its mode of teaching, classroom orientation etc. to community-based and problem-based teaching-learning process.

- xvii. There is a need to concentrate on developing the skills of general medical practitioner in health care.

III Upgradation of Health Services

- xviii. Diagnostic and support services must become available within every district.
- xix. Services should be made cost-effective for all. No person should die or suffer for want of good quality of services. Government or NGOs should take up the responsibility of making good quality of services available to all at reasonable cost.
- xx. There should be equity of services for both rich and the poor.

IV Coordination and Linkages in Health Care

- xxi. The reasons for the health programmes not yielding the desired impact is due to fragmentation of programmes and lack of coordination and cooperation within the health system.
- xxii. There is a need to bring together all health personnel in unison to tackle problems in the health sector.
- xxiii. To improve the health of people, there is firstly a need to build adequate coordination of the implementing agencies.
- xxiv. There is a need to effectively link subcentres, primary health community health centre, centre, taluk hospitals and teaching hospitals for development of a proper referral system.

V People's Participation in Health Care

- xxv. Active participation of the community is the prerequisite for success of any programmes and health care programme in particular.
- xxvi. 'Community will' is also an essential component for success of any programme, which should be geared to create health awakening.

VI National Health Population and Nutrition Policy

- xxvii. There is a need to immediately revise the National Health Policy and National Nutrition Policy should be sent for consideration of various professional bodies such as IAP, IAPSM and IPHA etc.
- xxviii. The draft National Population Policy needs to be prepared and circulated among the various professional bodies for their opinion.

VII Paediatric Illnesses and National Immunisation Schedule

Tuberculosis in Children

- xxix. There is a need to further study the problem of tuberculosis in special vulnerable groups including the risk groups in children.
- xxx. Further studies to minimise the current problems in the diagnostic criteria of tuberculosis in children, as well as in achieving better definition of area-specific risk groups should be taken up.

Dengue

- xxxi. Continuously updating the knowledge on dengue syndrome is required in order to cope with the challenges in future.

Hepatitis B

- xxxii. Three primary doses of Hepatitis B are recommended one at birth, second at 6 weeks and third at 6 months and one booster after 10 years of age. For infants who do not receive a dose of Hepatitis B vaccine in the neonatal period may be vaccinated at 6 weeks, 10 weeks and 6-9 months and at 10 years of age.

Immunisation Schedule

- xxxiii. The Immunisation Committee of the Indian Academy of Paediatrics (IAP) should look at the National Immunisation schedule and suggest modifications with respects to addition of new vaccine, dosage, schedule, etc. if any, keeping in view the epidemiological situation of the country.
- xxxiv. There is a need to strengthen the following on the lines of National Immunisation Schedule:
- a. creating awareness among people that late immunisation or missed opportunities does not mean that immunisation should not be given; and
 - b. emphasising on completion of three doses DPT and OPV before the child completes of the year.
- xxxv. Training of health care workers at all levels on the National immunisation Schedule based on the lessons learnt should be strengthened.

- xxxvi. Since the government polio pulse immunization (PPI) is adversely affecting the routine immunisation, emphasis on the health personnel in Govt. machinery to complete the routine immunization before they are deployed for PPI or any other programme should be made. Instead, services of NGOs may be availed for this purpose.
- xxxvii. The government should ensure availability of all vaccines even in remote areas.
- xxxviii. Awareness should be created in the community, that immunization is provided on all days and fixed-day immunization has been introduced for wider coverage of children.
- xxxix. Government should consider making smaller dose vial to avoid wastage of vaccines.

Measles, Mumps and Rubella

- xL. It is recommended to give one dose of MMR at 15-18 months of age. In case this is accepted, advancement of measles at 6 months may be explored.

Typhoid

- xLi. Children at 5 years of age must receive typhoid vaccine and to be repeated at the end of every three years.

Other Illnesses

- xLii. Vaccines against rabies, varicella (chickenpox), haemophilus influenza type B (Hib), hepatitis A may be kept as optional vaccines.

Modifications Suggested in the Immunisation Schedule

The modified UIP schedule will require following changes

- Addition of 1st dose of Hepatitis B vaccine at birth alongwith BCG and OPV;
- Addition of 2nd dose of Hepatitis B vaccine at 6 weeks alongwith DPT and OPV;
- Addition of 3rd Hepatitis B vaccine at 6 months and 1st and 2nd doses of typhoid vaccine at 4 to 6 weeks interval;
- Addition of MMR at 15-18 months; and
- Replacing DT with DPT 2nd booster at 5 years alongwith the 7th dose of OPV.

VIII Neonatal Care

- xLiii. Science of neonatology to be converted to the art of newborn care and this message should be spread the message far and wide.
- xLiv. Follow-up of guidelines of minimum perinatal care developed in 1982 by Task Force of Government of India should be taken up urgently.
- xLvi. There is an urgent need for National Policy on Neonatal and Perinatal Care.
- xLvi. Special neonatal beds should be created in the health facility and neonates given patient status in every health facility.
- xLvii. Minimal facilities for newborn care for providing essential newborn care at PHC should be established.

- xLviii. The newborn care component in the curriculum for undergraduates needs to be revised.
- xLix. The prime messages developed by UNICEF-WHO-UNESCO on newborn care at home by mothers, family members and government health workers meant to keep the baby warm, protect the baby from infection; emphasise, exclusive breastfeeding, assisting if the baby is not breathing, and recognising signs that require an immediate visit to the nearest hospital, need to be promoted.
- L. Intensive training on newborn care at all levels should be ensured.
- Li. Establishing newborn corners in every health facility.
- Lii. Establishment of referral link and transportation to reduce neonatal deaths should be taken up urgently.
- Liii. Since most of deliveries are conducted by the family members, delivery kits should be made available to the pregnant women. They should also be made available in the local store.
- Liv. All the trained birth attendants (TBAs) in a village should be taught the skill of putting the baby to breast as soon as baby is born, after the birth cry. If in any case the baby is not able to suckle, she should know how to extract the milk and give it to the baby.
- Lv. Appointment of additional ANM or a woman in each village who can handle basic delivery, resuscitation and prevent hypothermia to be explored.

- Lvi. The possibility of training few identified ANMs in anaesthesiology in rural areas needs to be explored.

Low Birth Weight Babies

- Lvii. Since weighing the child at birth is universally recognized and accepted all over the world, government could buy cheap and easy to use weighing scales and make it available, which can be used even by an illiterate person easily.
- Lviii. There is a definitely a need for research on identifying low birth weight babies using other anthropometrics data and this should be taken up by medical schools.
- Lix. Training of health care workers (pre-service and in-service) at all levels on neonatal care to be strengthened.
- Lx. The neonatal care component in the ICDS programme needs to be strengthened.

IX Adolescent Health

- Lxi. There is a need for a comprehensive policy on adolescents
- Lxii. Targeting urban slum population to reach out to disadvantaged adolescent especially adolescent girls.
- Lxiii. There is a need to introduce life skill education in schools that should include normal development in adolescence, sex education negotiations skills, etc.

- Lxiv. Nutritional and health status of adolescent girls needs to be improved.
- Lxv. The first step identified by the group for betterment of women and children in the future is ensuring education of both boys and girls.

X Discrimination Against the Girl Child

- Lxvi. The discrimination meted out to a girl child throughout her life needs to be fought at urgently.

XI Traditional Practices in Child Care

- Lxvii. Though some of the traditional practices are encouraging there is a need for further research to understand its benefits and harmful effects.

XII Rehabilitation Needs of Children

- Lxviii. There is a need to give focused attention to medical rehabilitation.
- Lxix. The Departments of Health should make all possible efforts to prepare it to deal with medical rehabilitation needs on priority basis through its health network at the earliest, so that secondary rehabilitation needs for education and employment becomes fewer burden some.

XIII Integrated Management of Childhood Illnesses (IMCI)

- Lxx. The IMCI approach is adopted with modification in Indian context. The neonatal care package is missing in the IMCI approach at present, which is responsible for 75 per cent of deaths in infancy.

SECTION - III

Fifty Years of Paediatrics in India

***Dr. D.G.Benakappa**

With the dawn of independence, the Britisher left India in the year 1947. There was wide spread poverty, ignorance, illiteracy among the people. The division of the country, resulted in large scale violence, death devastation, destitution and other allied problems among the people of this country. It took some time to recover from the onslaught.

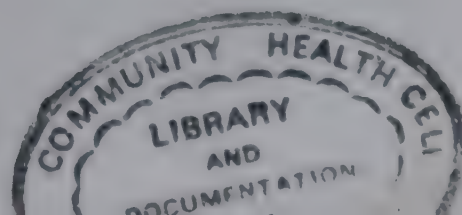
However, the Britisher left one or two good things for the unity of this country i.e., establishment of one common language English & a good communication all over the country through railways.

Since then the country has achieved progress in the fields of science and technology. The expectation of life in an average Indian has increased from 27 to 62 years. However, the progress achieved in the field of child health is meagre.

After independence, revolutions took place in various fields. The Green Revolution – increased food production, Yellow Revolution - increased edible oil production, Blue Revolution – increased space technology, Revolution in the field of pharmaceuticals and 5th revolution for child survival.

Revolution for child survival began with starting of various medical colleges in different parts of the country and establishment of a Department of Paediatrics for training of under graduates and postgraduates in the field of paediatrics. However, there was very slow progress. The architects of the Five Year Plan, the Government of India, health & family welfare programme, respective State Governments, NGO's, international agencies, like WHO, UNICEF took part in this revolution. Professional bodies like Indian Academy of Paediatrics, with strength of 10,000 Paediatricians were actively involved in this revolution.

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The Overview of Child Health Problems:

The infant mortality rate varies from State to State. The national average is 73 (1996). IMR is the highest in Orissa with 126/1000 births and the lowest in Kerala being 11/1000. The causes of infant mortality being preterm and low birth weight babies; birth asphyxia and birth injuries; congenital malnutrition; and communicable diseases.

India is one of the countries with high U5MR being 111(1996). Morbidity and mortality pattern in the age group of 2 to 5 is due to malnutrition, diarrhoeal diseases, acute respiratory infections, CNC infections, tuberculosis, accidents and poisoning.

The school health problems constitute malnutrition, vitamin-A and B deficiency, anaemia, upper respiratory infection, scabies, genito-urinary tract infection, dental caries, otitis media, trachoma, rheumatic fever, tuberculosis and helminthic infestations. The disabilities noticed in school children are mostly visual, auditory mental and physical. Most of the physical handicaps are due to poliomyelitis.

The child labour and child abuse are of great concern to the community. Approximately, 44 million children are employed in the various hazardous jobs. Child abuse and neglect are more common among female children. Female infanticide is increasing in several States especially in Tamil Nadu and Rajasthan.

At present there is resurgence of old diseases like malaria, cholera, TB, plague, which were said to be under control and it's a great problem for paediatricians. By the end of the century there is going to be a change in the pattern of paediatric illness such as paediatric AIDS, hepatitis, MDRTB, drug abuse for which the other paediatrician should be trained to cope with the situation. On the other hand, there are certain brighter aspects of paediatric problems i.e., decreasing trend of malnutrition. The impact of universal immunisation programme has resulted in the decline of vaccine preventable diseases is

happy situation. There are certain diseases peculiar to Karnataka. i.e. Kyasanoor forest disease and Handigodu diseases in Shimoga District and Mangalore; Japanese encephalitis in Kolar, Mandya, Mysore and Bellary; Reye's syndrome in Bangalore; and dengue fever in various parts of the State.

Box - 3

UN CONVENTION ON THE RIGHTS OF THE CHILD (CRC)

Right To Survival

includes

the right to life, the highest attainable standard of health, nutrition and adequate standards of living, right to a name from birth, the right to acquire a nationality, and the right to know and be cared for by his or her parents.

Right to Protection

includes

freedom from all forms of exploitation, abuse, inhuman or degrading treatment and neglect, and also the right to special protection in situation of emergency and armed conflicts.

Right to Development

includes

the right to education, support for early childhood development and care, social security, and the right to leisure, recreation and cultural activities.

Right to Participation

includes

respects for the views of the child, freedom of expression, access to appropriate information and freedom of thought, conscience and religion.

Attainment of Child Health Targets of the National Health Policy

*** Dr. Dinesh Paul**

In 1977, it was decided in Health Assembly of World Health Organisation to launch 'Health for All by the Year 2000 A.D'. In 1978, the Alma Ata Conference reaffirmed Health for All as the major social goal of governments. In the context of achieving this goal, the Ministry of Health and Family Welfare, Government of India convened a national conference in February, 1980 to discuss national strategies and action plans. The Working Group on Health for All, in 1981, suggested national targets to achieve the goal of Health for All by 2000 A.D and these goals were included in the National Health Policy document (1983).

In spite of our national commitment, the present status of the child in India is unsatisfactory. There are millions of children suffering from malnutrition and infection, which results in their stunted physical and mental growth. These children require care, support and services to provide them a healthy normal life.

Six common contagious diseases of childhood (diphtheria, measles, poliomyelitis, tetanus, tuberculosis and whooping cough) kill an estimated five million children in a year in the developing countries, accounting for approximately one-third of all child deaths. This human loss is unnecessary for it is possible to prevent all these diseases through immunization at an early age. Besides, the direct reduction in morbidity and mortality resulting from the vaccine – preventable diseases, immunization also has a considerable positive impact on the health status of infants and children by preventing many secondary infections following such debilitating illnesses as pertussis and measles. Reduction of orthopaedic handicap in children is a major benefit of polio immunization.

*Joint Director (Child Development Division), NIPCCD, New Delhi

We have undoubtedly made some significant strides in achieving the health and family welfare targets. The birth rate in the country declined from 36.9 per 1000 population in 1971 to 27.2 in 1997. The goals to be reached are to reduce the birth rate to 21.0 by the year 2000, the infant mortality rate is also to be reduced from the current 71 per thousand live births to less than 60 by 2000. In 1998-99, 22.36 million children received three doses of DPT, while 12.18 million were immunized in 1984-85. The coverage of BCG vaccination, DPT and polio immunization is around 23 million children for 1998 – 1999. This means that the services have to be strengthened to meet the objectives of the universal coverage by 2000, thus achieving the targets of the National Health Policy.

The various indicators identified in the National Health Policy can be divided into two broad categories :-

1. Direct child health indicators
2. Indirect indicators having impact on health status of children;

Direct Indicators

- i) Infant Mortality Rate
- ii) Preschool child mortality rate
- iii) Percentage of babies with birth weight below 2500 gms
- iv) Life expectancy at birth
- v) Immunization

Indirect Indicators

- i) Crude birth rate
- ii) Crude death rate
- iii) Growth rate
- iv) Pregnant mothers receiving ante-natal care
- v) Deliveries conducted by trained birth attendants

Infant Mortality Rate

Several factors particularly nutrition and infection influence IMR. In India IMR has reached 71 in 1997. The SRS estimates of infant mortality rate for the States of Bihar, Uttar Pradesh, Madhya Pradesh and Rajasthan for the year 1997 are 71, 85, 94 and 85 against the National average of 71. There are substantial differences among districts within State also. There are some districts in Bihar and U.P. where IMR is below the national average. The IMR in ICDS projects is less than the national average. One can therefore say with full optimism that we can achieve the goal set for 2000 A.D. for this indicator without any difficulty. However, the States will have to take steps to study and replicate their own successful experiences within State with major focus on improved infrastructure and delivery of services in poorly performing districts. The RCH programme has taken into consideration intra-district indices and therefore require following interventions :-

Perinatal Mortality		Post Neonatal Mortality	
1.	Tetanus toxoid immunization		Control of acute respiratory Infections
2.	Identification of high-risk pregnancy		Diahorreal diseases control
3.	Proper aseptic delivery		Nutrition care
4.	Care of new born		Immunization
5.	Care of low birth babies at home		
6.	Emergency paediatric care at CHC		

Percentage of Low Birth Weight Babies

Since it is difficult to weigh all babies at birth under the present system, except in ICDS programme, this information requires to be obtained from limited but representative areas on a five yearly basis. In the absence of a nation-wide data, it is difficult to comment on present level given in the National Health Policy document, as also future situation would be difficult to assess. Certainly, it may not be possible to

achieve the level of below 10per cent low birth babies reduction unless drastic health and socio-economic measures are implemented to mitigate many factors responsible for low birth weight babies, which are closely linked with eradication of poverty. However, monitoring of low birth weight babies needs to be included in the RCH programme.

Immunization

In the year 1998-99 a total of 221.6 lakh expectant mothers were covered under the tetanus immunization and 223.64 lakh children were immunized against DPT. In addition to 226.38 lakh children were immunized against polio 238.18 lakh against BCG and 210.03 lakh against measles.

It is obvious that the 8th Plan target of 100per cent coverage of all six preventable diseases has not been achieved. With the objectives of achieving zero incidence of polio by 2000 AD the Department of Family Welfare has initiated the strategy of two Pulse Polio Immunization days in addition to the immunization of polio under UIP since December, 1995.

As per the estimates of Department of Family Welfare the estimated nation-wide coverage under PPI is 92per cent and about 8per cent of children did not receive any dose of Pulse Polio immunization. Thus the coverage under the PPI needs to be improved. It may be mentioned that the Polio reduction effort can be effective only with high routine coverage under the UIP.

At present the immunization coverage as reported in many studies is significantly low as compared to Department of Family Welfare data, which is matter of serious concern. The performance of immunization under PPI in 1998-99 is about 98per cent. In some of the States like Bihar, the routine coverage has been as low as 51.4per cent. It is important that all States and UTs must improve the routine coverage of polio also.

Immunization of 100per cent of all infant against the six targeted diseases by 2000 is feasible provided following requirements are met:

- i) Adequately trained manpower as the vacancy position of MMPW is very high in several States.
- ii) Well organised system of coordination of immunization services with other departments especially the ICDS projects.
- iii) Identification of blocks having coverage between 50 to 85per cent, 85per cent to 100per cent and 100per cent coverage in last three years. Intensification of efforts in category I and category II is required.

Crude Birth and Death Rate and Growth Rate

The National Family Planning Programme launched in 1952 with the main objective of reducing the birth rate to the extent necessary to stabilize the population at a level consistent with the requirements of national economy. The modern medical technology has resulted in rapid fall of death rate from 27 in 1951 to 8.9 in 1997. In contrast, reduction in birth rate has been less and it declined from 40.8 in 1951 to 27.2 in 1997.

It may be mentioned that the growth rate has been over 2per cent in the first four decades and the growth rate has been around 1.9per cent in 1991 to 1997. The rate of decline is likely to be accelerated during 1997 to 2002. The decline in birth rate have occurred in all the States and slower in populous States like Uttar Pradesh and Bihar. We can very satisfactorily say that we have achieved the target of death rate. Within the States where the death rate is high in some districts we will be able to reduce to 9 by 2000 AD. However, we may not be able to achieve the target of reduction of birth rate to 21 by 2000 AD. However, the following urgent action is needed:

“The draft National Population Policy prepared by the Department of Family Welfare and under the scrutiny of Deputy Chairman, Planning Commission may be

widely circulated among the various institutions and professional bodies before finalization.”

Pregnant Mothers and Antenatal Care

The existing data on the proportion of mothers receiving ante-natal care clearly indicates that it may not be feasible to attain 100per cent coverage with minimum package of ante-natal care as specified below. Moreover the manner in which this data has been obtained seems to be incorrect. It is, therefore, recommended that the data required to define a beneficiary for ante-natal care needs to be defined. This should include:

- i) Registration
- ii) Tetanus toxoid (two doses)
- iii) One complete physical examination including Hbper cent, bloodsugar, VDRL testing and complete physical examination during the first, second and third trimester and identification of high risk pregnancy during third trimester.
- iv) Consumption of iron and folic acid tablets atleast for 100 days.
- v) Feasibility of prophylaxis according to disease in endemic areas such as malaria, HIV, vitamin A deficiency, worm infestation etc.

Percentage of Deliveries by Trained Birth Attendant

At present half of the deliveries are conducted by untrained birth attendants in India. Therefore it can be said with full confidence that the target of 100per cent coverage by trained birth attendant is also not feasible.

The Ministry of Health should try to promote institutional deliveries under RCH programme and one Lady Doctor may be posted in each Primary Health Centre for conducting deliveries in areas where MMR is more than two. The safe disposable delivery kit should be given to the mother during antenatal examination at the time of

third trimester to achieve 100per cent coverage of deliveries by birth attendants, using safe delivery kit.

Recommendations

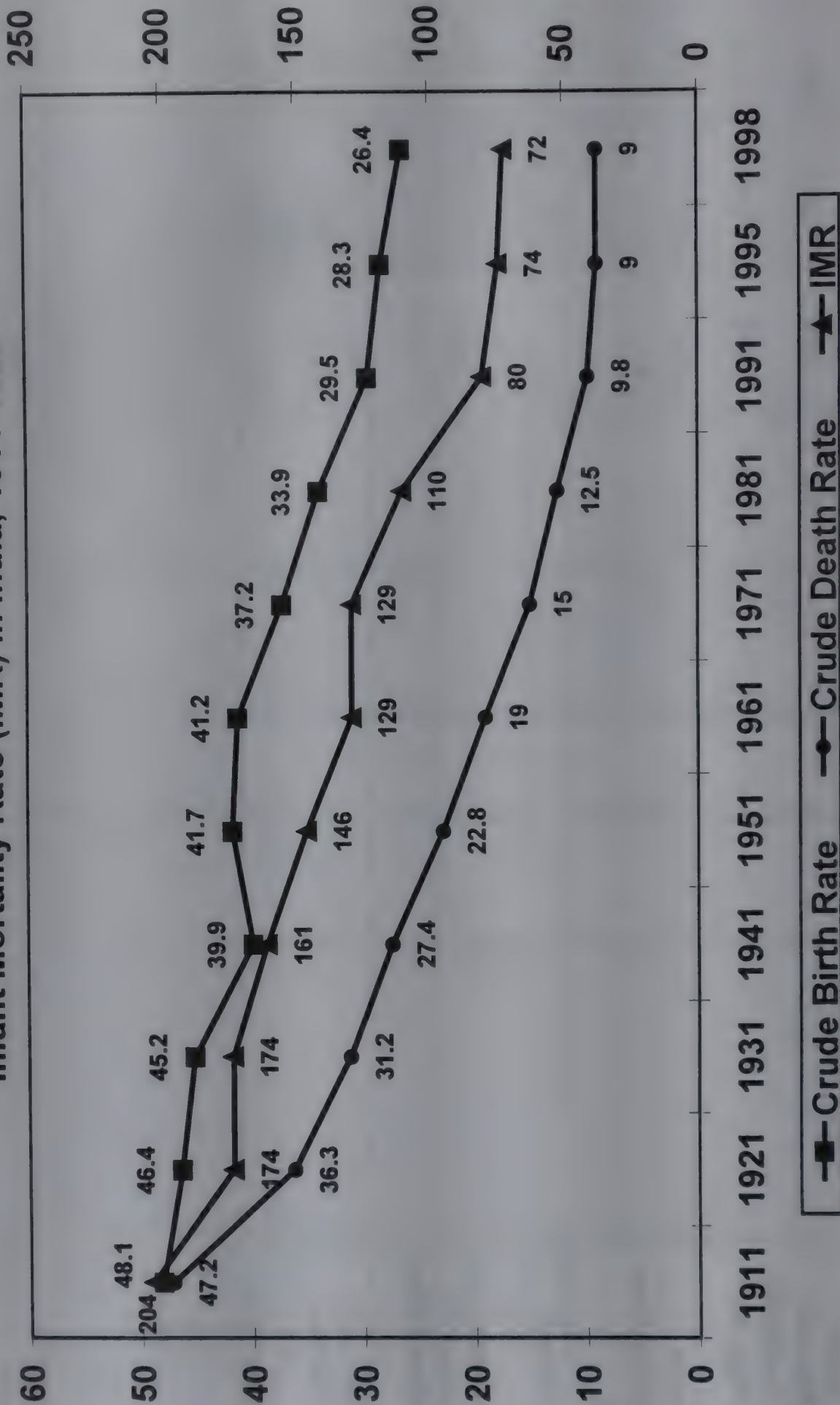
- I) The Department of Health and Department of Family Welfare should immediately prepare and submit a revised draft National Health Policy for consideration of various professional academic bodies such as IAP, IAPSM, IPHA etc. for discussion in their annual professional meetings for the year 2000.
- II) There is need to identify only a few crucial indicators for monitoring and assessing the MCH services to be included in the National Health Policy. They are:
 - i) Infant mortality rate
 - ii) Perinatal mortality rate
 - iii) Birth and death rate
 - iv) Immunization status
 - v) Pregnant mothers receiving ante-natal care (as defined above)
 - vi) Indicators related to monitoring of HIV/AIDS in the country relating to women and children.
 - vii) Incidence of tuberculosis in children (under 5) and in general population.
 - viii) Prevalence of moderate and severe malnutrition in under fives.
- III) The draft National Population Policy to be prepared and circulated to the various professional bodies as directed by NDC.

Goals for Health and Family Welfare Programmes

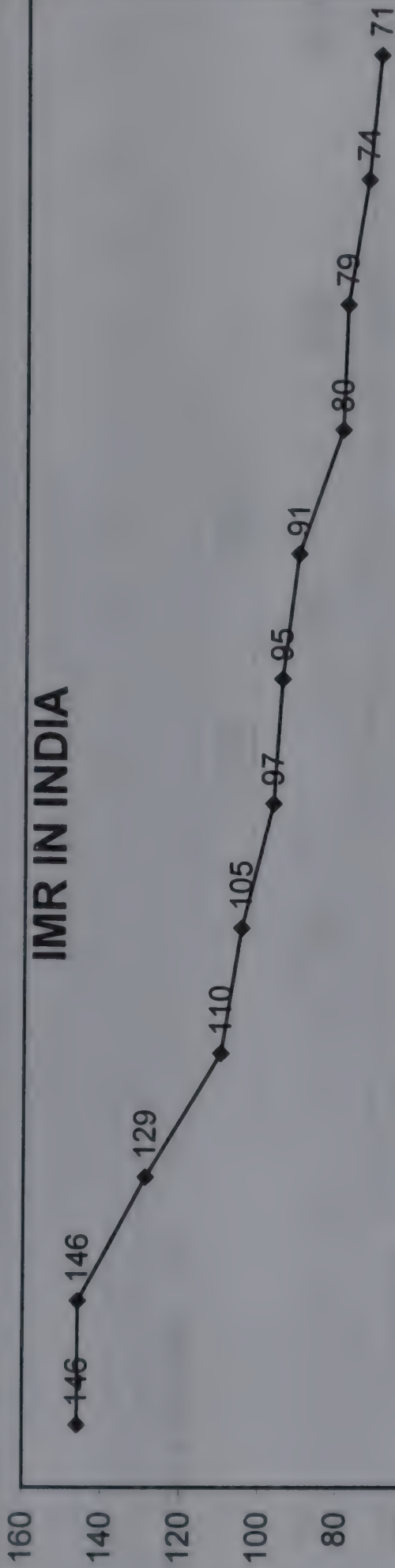
S. No.	Indicator	Current Level	1985	Goals 1990	2000	Current	2004	2010	2020
1.	Infant Mortality Rate	Rural 136 (1978) Urban 70(1978) Total 125 (1978)	122 60 106	87	below 60	71 (1997)	Below 60	50	Below 30
	Perinatal Mortality	67 (1976)			30-35	42.5 (1994)	Below 35	25	Below 10
2.	Crude Death Rate	Around 14	12	10.4	9.0	8.9 (1997)	8	6	Below 5
3.	Pre-school Child (1-5 yrs.) Mortality	24(1976-77)	20.24	15.20	10		Below 10	-	Below 5
4.	Maternal mortality rate	4-5 (1976)	3.4	2.3	below 2	4.53 (1992)	Below 2	1	Below 1
5.	Life expectancy of birth (yrs.)	Male 52.6 (1997-81) Female 51.6 (1976-81)	55.1 54.1	57.6 57.1	64 64	60.6 61.7 (1991-96)	65 65	70 70	75 75
6.	Babies with birth weight below 2500 gms. (percentage)	30	25	18	10	NA	Below 20	Below 15	<10
7.	Crude Birth Rate	Around 35	31	27.0	21.0	27.2 (1997)	25	20	15

8.	Effective couple protection (percentage)	23.6 (march, 82)	37.0	42.0	60.0	43.5 (1993)	Not required	—	—
9.	Net Reproduction Rate (NRR)	1.48 (1981)	1.34	1.17	1.00	1.5 (1990)	1	1	1
10.	Growth rate annual	2.24 (1997-61)	1.90	1.66	1.20	1.83 (1997)	1.00 by 2010		
11.	Family size	4.4 (1975)	3.8		2.3	4.0 (1988)	Not required	—	—
12.	Pregnant Mothers receiving ante-natal care (%)	40.50	50.60	60.75	100		100 by 2005	100	100
13.	Deliveries by trained birth attendants (%)	30.35	50	80	100	46.2 (1991)	60	80	100
14.	Immunisations status (% coverage) TT (for pregnant women)	20	60	100	100		100	100 Eradication	100
	DPT (children below 3 years) Polio (infants) BCG (infants) Measles	25 5 65 -	70 50 70 -	85 70 80 -	85 (100) 85 (100) 85 (100) 100	91.5 92.6 98.1 83.1	Eradication by 2005 100% 100% Eradication by 2020	100 100% 100% Eradication by 2020	100 100% 100% Eradication by 2020

Estimated Crude Birth Rate, Crude Death Rate and Infant Mortality Rate (IMR) in India, 1911-1998

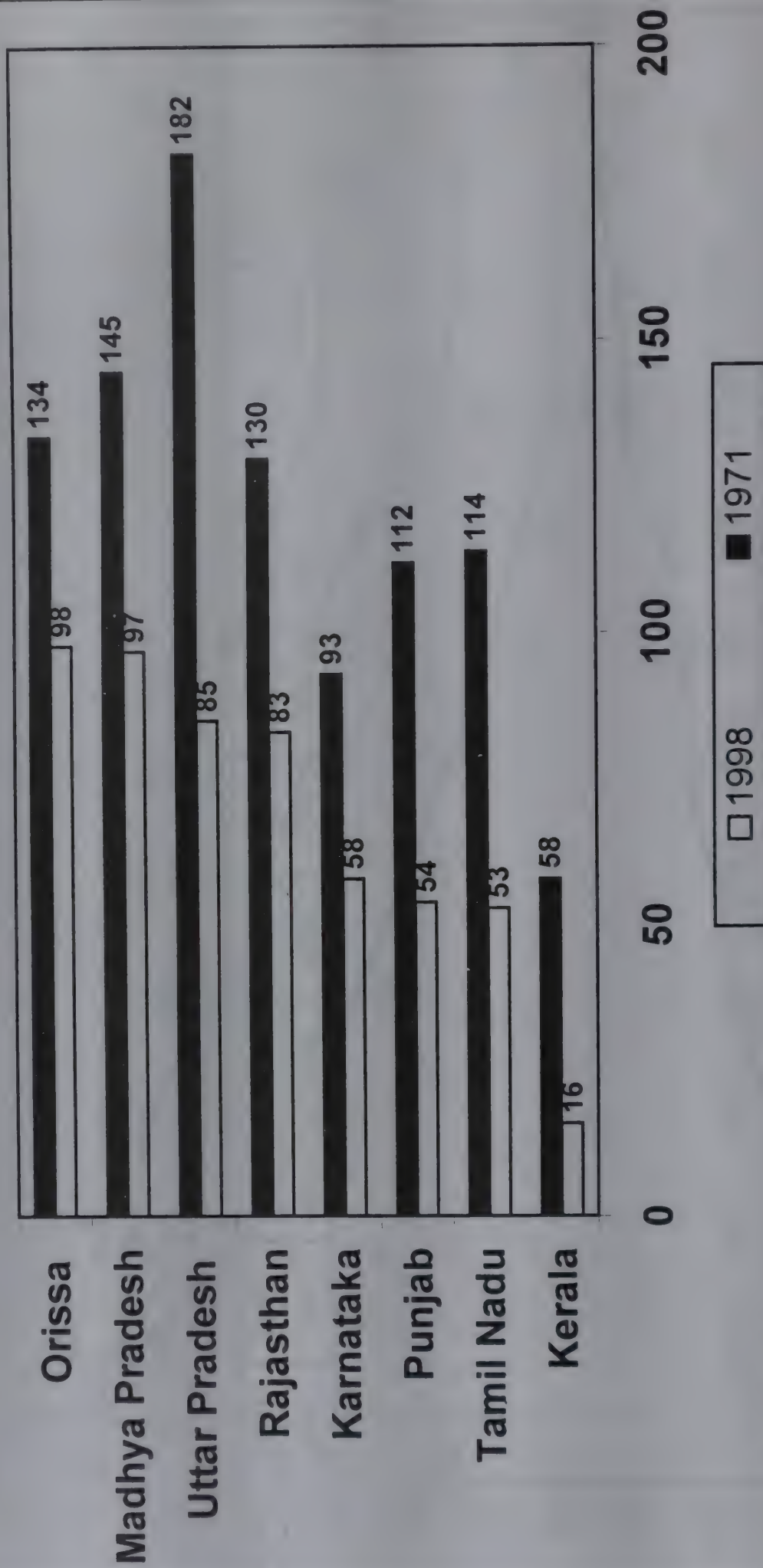


IMR IN INDIA



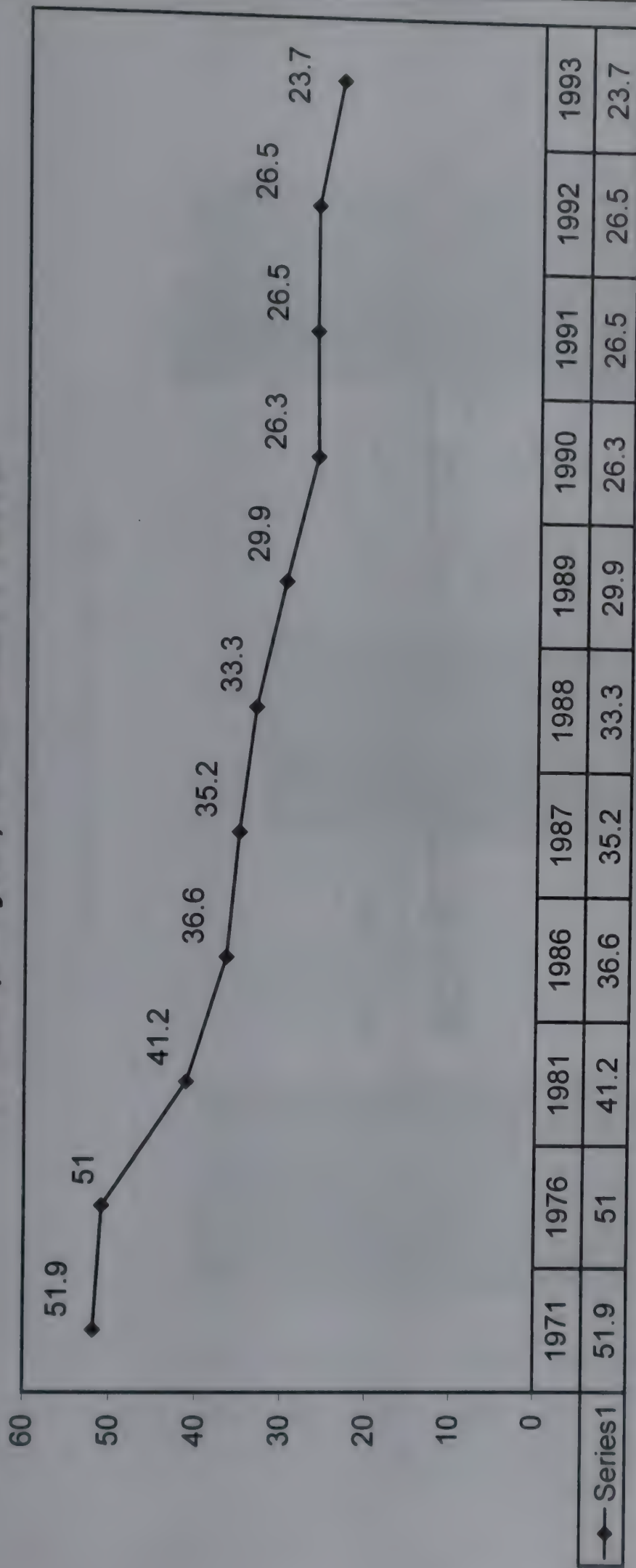
Series1	1951	1961	1971	1981	1983	1985	1987	1989	1990	1992	1995	1997
	146	146	129	110	105	97	95	91	80	79	74	71

Infant Mortality Rates (IMR) in Selected States of
India 1971 and 1998

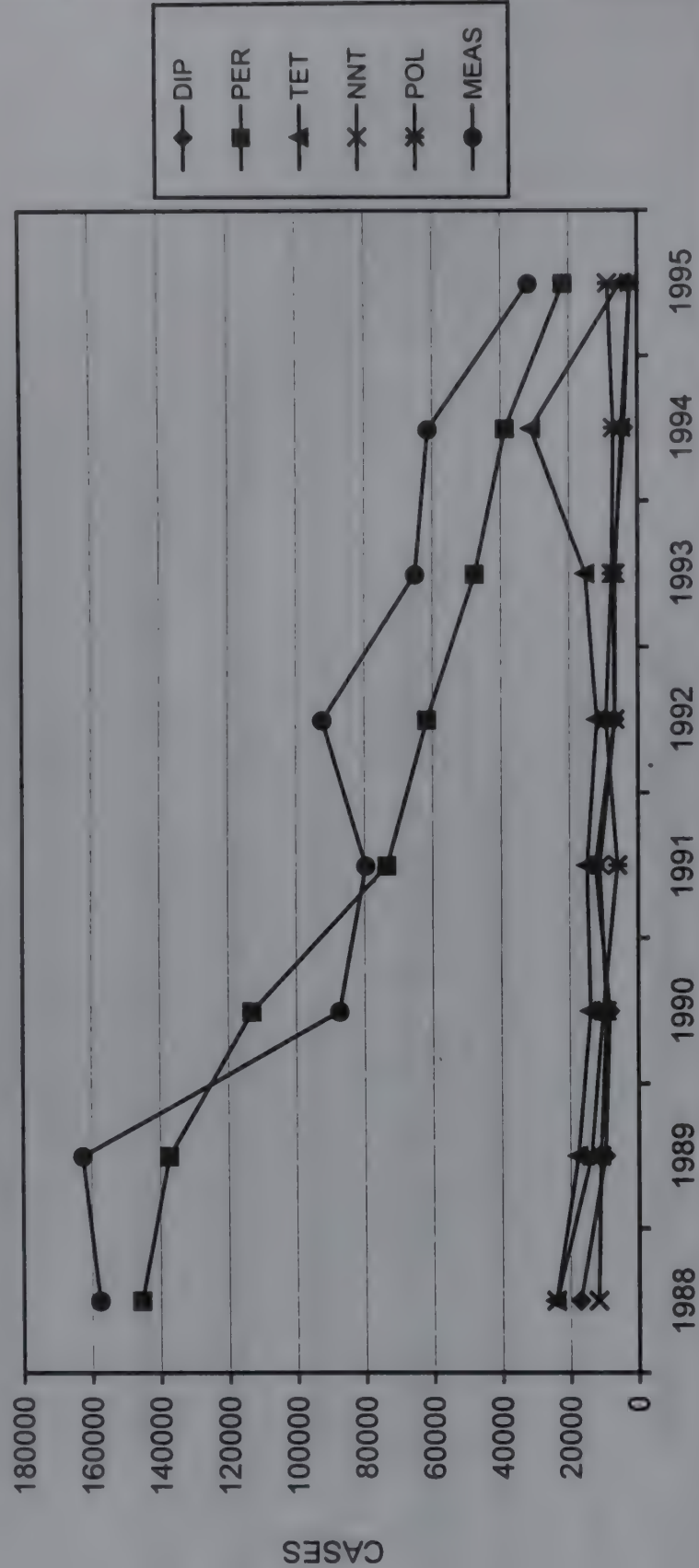


Source: SRS 1998

CHILD (0-4 yrs.) MORTALITY RATE

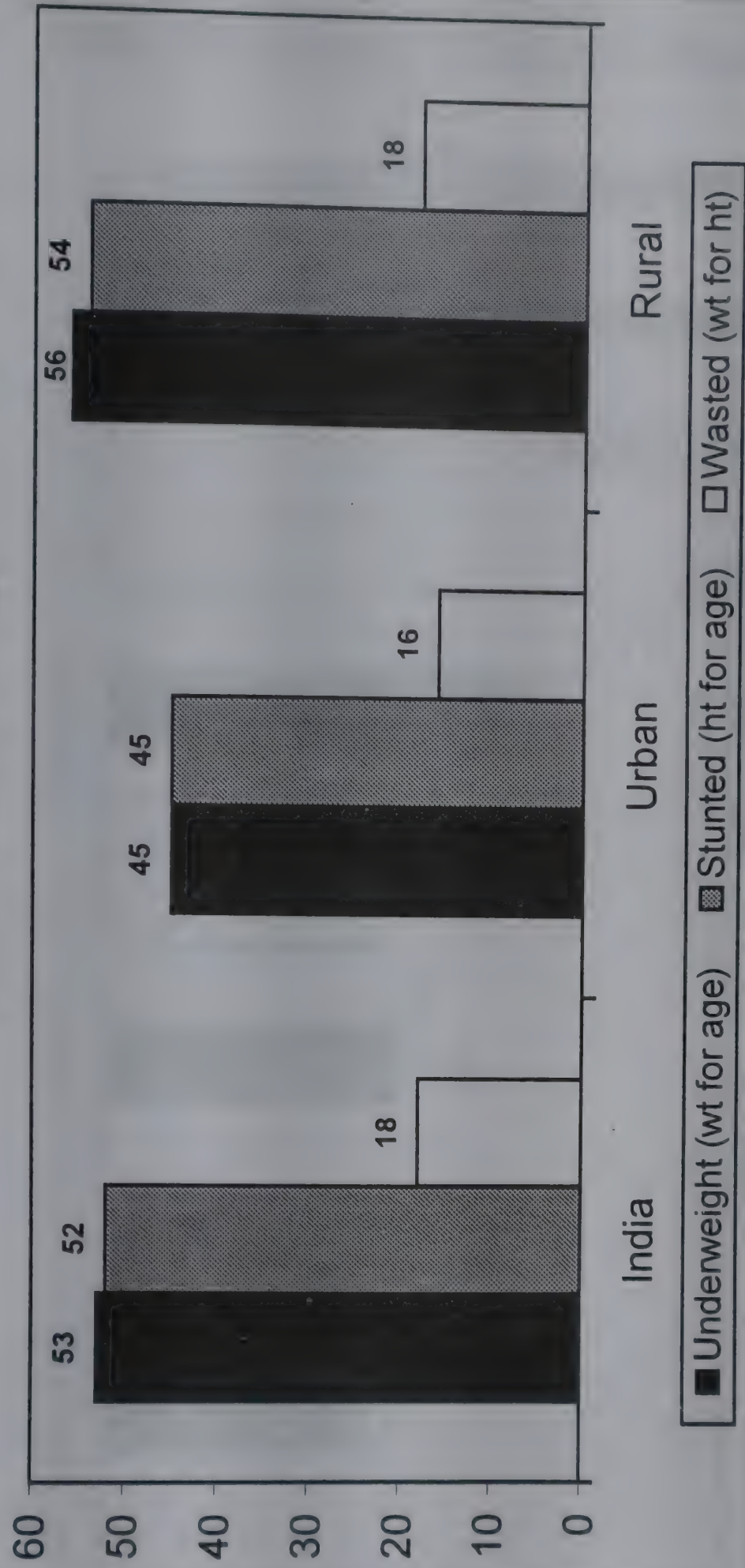


Incidence of Vaccine Prev. Disease

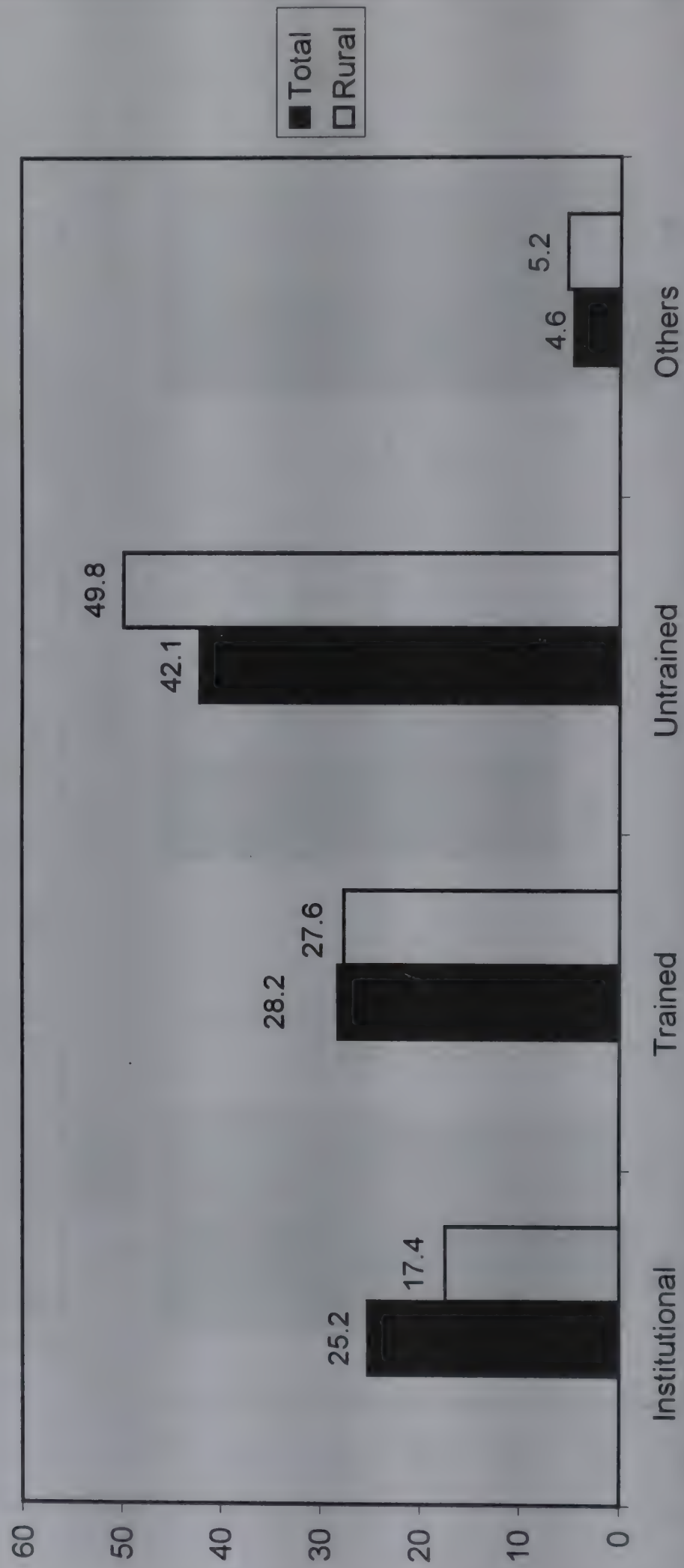


Child Undernutrition

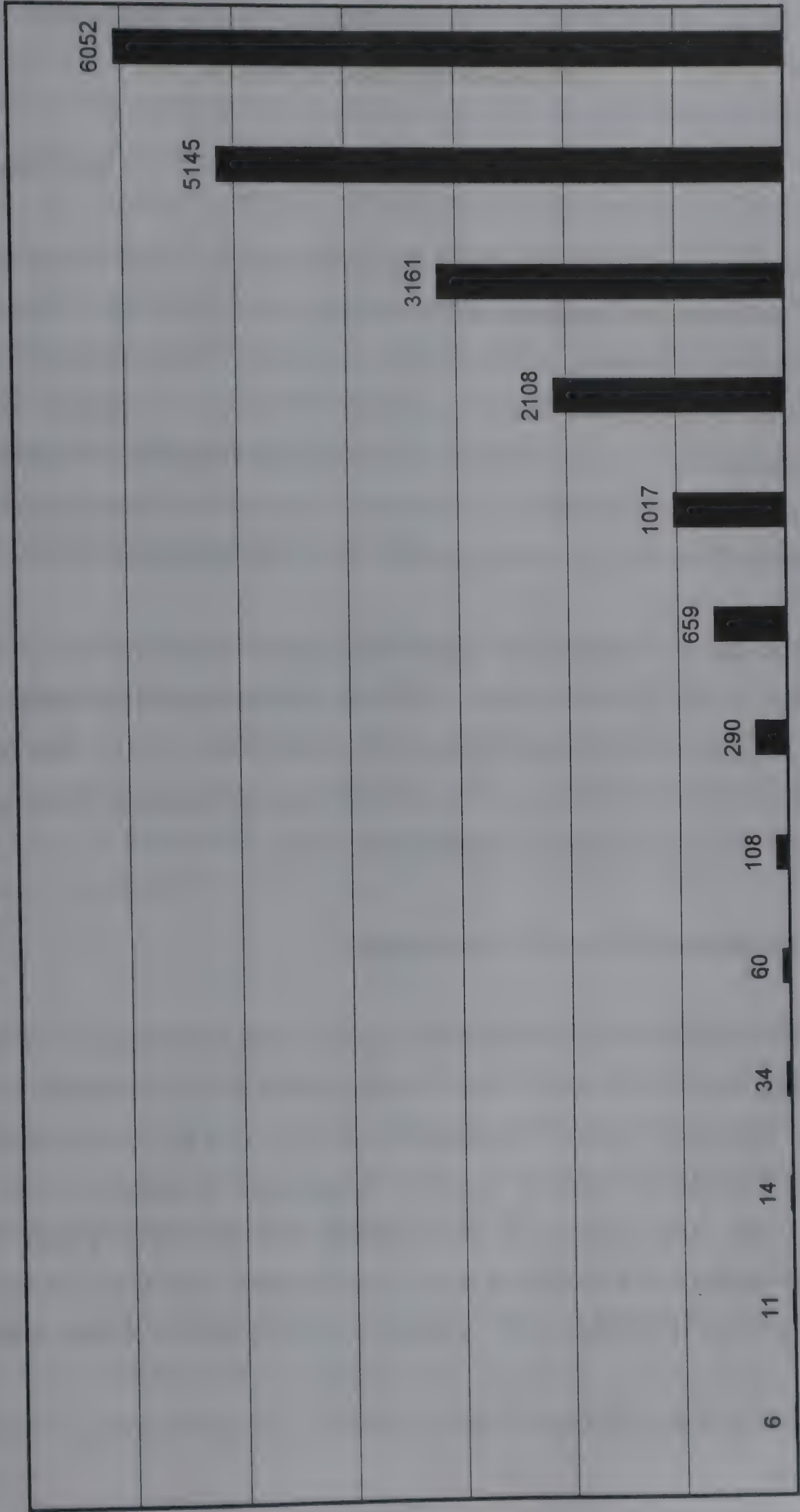
Perecent of children under age 4



**Percentage Distribution of Births by Type of
Medical Attention at Delivery, 1995**



Cumulative AIDS Cases in India (May 1986 - May 1998)



Pediatric Tuberculosis at the Door-Steps of a New Millennium: The Epidemiological Perspective

*** A.K. Chakraborty**

Notwithstanding the concern that the paediatricians in India usually have, with regard to the extent and seriousness of tuberculosis disease in children, information on the prevalence and incidence of infection and disease, as well as mortality from it, is rather scarce. It is proposed during the course of this talk, to present data on the epidemiological trend of tuberculosis in general and the situation in the paediatric age group in particular. It is intended to develop some plausible hypotheses on issues, which are germane to the problem, in order to identify some areas for possible action!.

It is not the intention to present the myriad manifestations of paediatric tuberculosis, as seen in clinical practice, complete with their distribution among attending children and their engrossing case-histories. The attempt here, on the other hand, is to present the problem from the point of view of the observed occurrence in the community at large, and to examine their policy-implications, if any.

I. Epidemiological Curve of Tuberculosis

The self-limiting predilection for the curve of disease development, in the course of its natural dynamics, as observed both in animal models as also in human hosts, finds an almost synonymous replay in the epidemic curve of TB in the community as well! In Fig.1, the hypothetical epidemic curve of tuberculosis, as adapted from Grigg is depicted.¹ The curve consists of an ascending limb (spreading phase), the peak transitional phase) and a descending limb (endemic phase). The whole epidemic would last several centuries, instead of a few weeks or days, as in the case of other epidemics.

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The ascending limb is characterized by a proximity between the rates of infection, disease and deaths, the gap between them widening as the epidemic would progress. The ascending limb is steeper than the descending one. The former is characterized by higher rates of disease and death in the underprivileged and in those who are relatively more susceptible, e.g., females and children. The relatively weaker sections of the community e.g., the women, the children, especially those among the poor and the tribals, are more vulnerable when the epidemic is relatively young. As the epidemic would develop in time, the relative peaks in respect of the mortality rates, disease and infection rates are achieved in succession. **As the epidemic ages, more disease is seen in adults & in males, rather than among women & children (Fig.-2).**

II. Epidemiological Situation in India

Several variables seem to be affecting the trend, differently from area to area. Hence, it appears hardly possible to hypothesis a single time trend for the country as a whole. Some of the data, currently used by the national programme planners, as average rates for the country as a whole, is given in Table-1. Attempt has been made here to include a range for the estimates (for 95% confidence limits), both for the average rates, as well as for the absolute numbers, worked out for the country (based on Chakraborty AK²).

Following extensive work on the epidemiology of tuberculosis in the western countries in the comparatively recent times, Annual Risk of Infection (ARI) has been recognised to reflect the current epidemiological situation in an area, in preference to the disease rates³. It is also possible to derive from it an estimate of the current rate of incidence of the infectious cases, as suggested by Styblo.

There is not enough evidence of ARI declining in India apart from Bangalore rural area and the Kashmir valley². However, the wide gap between infection, disease and mortality rates, lower occurrence in females and children, together with concentration of

cases in the adults, are features in the epidemiological situation in India, which could be interpreted as signifying the epidemic curve as having passed its peak in India⁴. These findings appear to be meaningful when considered in conjunction with the general observation of paediatricians that miliary, meningeal and other disseminated forms of tuberculosis in children are waning throughout the country. **India could nevertheless be identified as a country of high transmission and inadequate decline, a situation which it shares with the sub-Saharan countries (ARI 1-2.5%, annual decline 0-3%).**² The situation merits special concern, since the already diagnosed cases continue to constitute a major proportion of the prevalence ($2/3^{\text{rd}}$), year after year. As long as the above situation of a supposedly 'steady state' is allowed to continue, infection-transmission in children may not decline sufficiently. Further, the sensitive and delicate balance, as of now, could be tilted adversely, especially in vulnerable groups by factors affecting CMI-levels.

III. Tuberculosis in Children : The Indian Situation

- a. The data available from hospital –based studies, even though these could be blessed with sounder & more reliable diagnostic procedures, may not be relied upon for the purpose of working out prevalence or incidence in the community. This is for the simple reason that the institutions do not enjoy an area-wise coverage of population. In fact, their image may attract cases from far & near, & those diagnosed cannot be taken to represent an area – wise prevalence/incidence. Information from the handful of selective area studies, conducted among children in the community in India, are interpreted here, in the light of the epidemiological situation of tuberculosis in India.
- b. **Tuberculosis infection:** It appears that considerable differences exist in the infection rate among children from area to area within the country. This could be a manifestation of the prevailing socio-economic conditions in the population : Choolai in Chennai & Car nicobar representing the worst case – scenario and Bangalore, the best. (Table-2)^{5,6,7,8}.

- c. **Infection & disease in clusters of households:** It is reported in a study that within a cluster of households formed around a bacteriologically positive case, a bacteriologically negative case and a non – case household, the proportion of child contacts infected were 25.8, 14.9 & 9.8 per cent , respectively. (Differences statistically significant) (Fig.-3) ⁹. The nucleus household of the bacteriologically positive case – cluster had the highest risk, but the risk remained upto the forth house away from the nucleus household in the cluster, (not presented). **Thus, the contact with a bacteriological case, in the cluster upto the 4th house in the neighbourhood, poses a risk for the children.**
- d. **Tuberculosis disease (all forms):** Among the 0-14 year old tribal children of Carnicobar, the best estimate of tuberculosis of all forms was found to be 6.0 per thousand (Table 3)⁸. No other estimate on prevalence of all forms of tuberculosis among children in the population is available for India. In a recent study, Mahatma Gandhi Institute of Medical Sciences, Sewagram (MGIMS) has reported the prevalence rate of glandular tuberculosis to be 4.4 per thousand (between 2 & 6 per thousand, confidence limit 95%)¹⁰. Those with a positive family history of tuberculosis had 2.6 times the risk of developing tuberculosis lymphadenopathy, over those without such a history. There was a strong association in the study between the prevalence of TB lymphadenopathy and the living standards of the children: all such cases being detected among those living in kutcha houses, specially in joint families (43%), as compared to those in nuclear families (26%).

Incidence of all forms of tuberculosis disease in Carnicobar was found approximately to be a fifth of the prevalence (observed over 18 months) ⁸. Incidence of all forms of tuberculosis disease was found to be 2.8 per thousand among the 1-4 year old children in Chennai (observed over a 4 year period of follow-up) (Table -3). ⁵

It is of interest to note in this connection, that not much difference was observed in the type of disease developing among the previously infected, as compared to that among the newly infected. Almost all of the tuberculosis patients diagnosed both at Choolai & at Carnicobar surveys, were those of tuberculosis lymphadenopathy, either cervical or mediastinal. There were only a few patients of tuberculosis spine and sputum positive pulmonary tuberculosis cases, among those diagnosed. In contrast, it is also important to note here that in the selected urban slum population of Bangalore city, there was no bacteriologically positive pulmonary tuberculosis case, nor any case of glandular tuberculosis. The cases diagnosed were only X – ray active pulmonary tuberculosis patients, the prevalence being 3.5 per thousand (all were primary tuberculosis). The situation is so different for the Bangalore area as compared to some others, as per e.g., Choolai slums in Chennai. **The situation in Bangalore slum population studied could probably represent the most favourable case – scenario, the situation in Choolai, Sewagram rural areas & Carnicobar being at the other end of the spectrum** (Table 4). These observations could be taken to represent different ages of the tuberculosis epidemic, in the context of the epidemic curve drawn in Fig. -1, probably respective to the socio-economic state of the population.

- e. **Pulmonary tuberculosis:** the age-wise prevalence of sputum positive cases is given in (Fig. – 4) (data derived from a survey among a comparatively large rural population group in South India.⁷). **It could be concluded that pulmonary tuberculosis, especially the sputum positive case, is less of a problem among the children,** than in the rest of population. It was also observed from the above data, that over time, higher and higher proportions of sputum positive cases are found to be prevalent in the higher age groups, there being less & less of cases in the paediatric population group. This is interpreted to be in accordance with the advance in the epidemic curve of tuberculosis for the area studied; and would conform to a slow downward or an endemic phase of the epidemic (Fig.-1).

- f. **Infection time of Infection and risk of morbidity:** The risk of developing disease appeared to be the highest among the newly – infected (20.0 per thousand per year) and the least among the initially non – infected (1.2 per thousand per year) (Table 5). The risk among the initially infected children lay in between (8.8 per thousand per year)⁵. **The risk among the recent converters could thus identify this group as having a potential high risk. The risk could be distributed evenly over a period of 0-4 years (not on table).**
- g. **Tuberculin induration size and morbidity:** the size of the induration, following tuberculin test, has an important bearing on the development of tuberculosis disease in children at a subsequent time. Morbidity rates were observed to rise steeply from 7.0 per thousand among children with 0-11 mm tuberculin induration size, during a 4 year period of observation, to be 63.0 per thousand among those with 18 mm & over induration size (Table-6).⁵ It was as high as 103.8 for children with 24 mm or bigger induration size. **An 18mm or bigger tuberculin reaction size in Choolai area could discriminate the children as having a higher risk with respect to tuberculosis.**
- h. **Tuberculous mortality in Children:** Mortality due to tuberculosis in children has been shown to have a strong correlation with the socio-economic state of the population studied. In the urban slum of Choolai in Chennai, 1-4 years old children had an annual tuberculosis mortality rate of 239 per 100,000 (Table 3)¹¹. This has been set against the observation for the same age group made in the rural areas of Tamil Nadu (Thiruvallur area) and Bangalore rural area (between 52 and 55 per 100,000). It is useful to consider the above findings in the light of the tuberculosis mortality rate in the general population of Bangalore rural area, being 90 per 100,000¹². **In the 1-4 year age group, 50 per cent of the total crude deaths in the Choolai area were estimated to be due to tuberculosis, as compared to only 5 per cent in Tamil Nadu & Bangalore rural areas. In the general population in Bangalore district, for all ages both sexes, however, the cause specific tuberculous deaths were estimated to comprise about 10 per cent of**

the crude mortality. Investigating for the risk group for tuberculous mortality, it was observed that among the initially infected children aged 1-4 years in Choolai area, over 80 per cent of the total deaths could be attributed to tuberculosis¹¹. **The high risk of tuberculosis among the underprivileged & vulnerable pre-school children is thus amply illustrated.** Mortality from disseminated forms of tuberculosis disease, e.g., tuberculosis meningitis (TBM), could be conceived as the most serious outcome of infection in early childhood, causing the highest case-fatality there. On the basis of the available data, Chakraborty has found it possible to estimate that nearly 25 deaths could be occurring in an Indian district (population considered: 1.5 million). Of course, the estimated number may vary, depending on the ARI, which is not likely to be uniform throughout the country. The above estimate on TBM deaths could be taken as the most favourable estimate (Chakraborty, under publication).

- i. **Tuberculin induration size and mortality:** In a rural population group followed up for 3 years, Rajnarain had reported crude mortality to be associated with the tuberculin induration size: in the 0-4 year aged population, those with induration size of 15 mm & larger and in 5-24 years aged population 20 mm or more induration size, had a higher crude mortality.¹³ The risk among the recently infected, especially among those below 10 years in age is also highlighted in the study.
- j. **Some diagnostic criteria developed from survey results:** A scoring technique is often used while arriving at a diagnosis of paediatric tuberculosis, no individual investigation being confirmatory, except possibly the histopathology of biopsy material. The latter is often hard to obtain in any case. The scoring technique used to label a diagnosis could yield different results depending on whether it is used under epidemiological or clinical situations. This is because of action-taking on the part of the children raising the suspicion-index in the latter. However in so far as the epidemiological situation is concerned, the scoring method, as used in the Carnicobar survey, was found to have a high sensitivity (85%), as well as

specificity (95%), when used along with the input of a clinical diagnosis, as evaluated against histopathology¹⁴.

Lastly, from the Sewagram study, it would appear that, country to expectation, tubercular lymphadenopathy was equally prevalent in the two groups of children, one with BCG scar, and the other without. The discrimination of a possible risk group among the children by this variable thus did not seem feasible.

IV Conclusion

Death & morbidity in children would seriously challenge the paediatricians, who encounter the problem and have to deal with the same. In the paper, it is highlighted that very young children (say upto 4 years of age), in the relatively under-privileged areas in the country, are especially at risk, given the situation of high transmission of infection & inadequate decline in it., (Table-7) constructing a complete profile of the high risk group. The time-line of development of disease underpins the risk of developing various from of the disease, throughout the life of an infected person, which begins in early childhood itself. The total life time of risk is estimated to be 10 per cent.

Further, it is pertinent to observe that the natural trend towards the limitation of disease in humans, through CMI-Intervention is adversely affected, both by socio-economic situation as well as AIDS-intrusion in the developing countries. As a result, India could be faced with the forecasts of increasing morbidity and mortality. The static nature of the epidemic in the country, contributes no less to the problem.

In view of the available data in India, as presented in this paper, and in the context of the recently changed priority for the tuberculosis programme in India, it could be worth looking into the problem in special vulnerable groups in the population, including the risk groups in children. It is also possible to envisage further studies on it, aimed at minimising the current problems in the diagnostic

criteria in children, as well as in achieving better definitions of area-specific risk groups. The latter has been proposed as a hypothesis in this paper (Table 4 & 7). These could be further developed into action – oriented agenda under the national programme.

Family, whereas the HIV-impact is not yet measured in terms of the epidemic trend of tuberculosis in this country, urban hospital groups in some cities have started reporting on a higher and higher association.¹⁵ The risk from HIV needs to be projected by risk factors presented herein, in the form of a model. I wait for my succeeding associates and colleagues to complete this task, as the next millennium sets in, to help in policy formulation.

Table 1: Problem of Tuberculosis in India (average)
(Estimated on 1991 Population)

1.	Population: 844 million: 726 million in 5+age (85%)	
2.	Prevalence of Infection	
	a) Rate –38% (all ages)	b) More than 50% in 40+age
3.	Prevalence of radiologically active abacillary pulmonary tuberculosis	
	a) Rate – 1.6%(0.3, 0.26 – 0.47%)	b) Number – 12 million (2.3 million)
4.	Prevalence of positive cases	
	a) Rate – 0.4% (0.6, 0.3 – 1.1%)	b) Number – 3 million (4.4 million)
5.	Prevalence of total cases	
	a) Rate – 2.0%(0.9, 0.56 – 1.57%)	b) Number – 15 million (6.5 million)
6.	New patients arising annually: 2.5 to 3 million	
7.	New bacillary cases arising annually: a) Rate – 0.13%	b) Number – 1 million
8.	Case fatality rate: 14% in untreated bacillary cases	
9.	Mortality (annual): a) Rate – 50 – 80/100,000 population (45,28-71 per 100,000)*	b) Number – 0.3 – 0.5 millions (0.42, 0.26 – 0.67 millions)*

Rates in bracket based on Ref. No 9, 10.

* Derived from WHOSEARO workshop on country specific tuberculosis estimate, 1996 (unpublished)

Source : Chakraborty AK ²

Table 2 : Prevalence and Incidence of Tuberculosis Infection in Paediatric Age Group (From Some Selected Areas, with Available Information)

Infection	Age Group	<u>Tamil Nadu</u>		Carnicobar (Tribal)	<u>Bangalore District</u>	
		Urban	Rural		Urban Slum	Rural
Prevalence (%)	0-4	7.3	2.1-2.7	3.7	1.8	3.7
	5-9	22.3	15.0	12.0	11.9	7.9
	0-14	-	17.6	10.0	-	8.6
Incidence (% per year)	0-4	} 3.0	1.74	-	-	0.80
	5-9	-	2.42	-	-	1.07
	0-14		-	-	-	1.02

Source :

1. Narmada et al⁵
2. Das AK et al⁸
3. Gothi et al ^{6,7}

**Table 3 : Prevalence and Incidence of Tuberculous Disease and Mortality in
Paediatric age group (From Some Selected Areas in India with
Available Information)**

	Plum TB*		Glandular TB@	All forms of TB
	Bacillary	X' ray active abacillary		
Prevalence (per 1000)	1.0	3.0	4.4	6.0**
Incidence (per 1000 py)	0.2	0.5		1.0**
due to TB (per 100,000 py)		-		(2.8) (a)
				52-55.0 (b)
				(239.0) ©

Figures in bracket

TB = Tuberculosis

py = per year

() Depict worst case-scenario.

* Age group : 5 – 14 years; @ Age group : 0 – 14 years

** Age group : 0 – 14 years, (a) (b) (c) Age group : 1 – 4 years

(a) in urban slums of Choolai, Chennai.

(b) From rural areas of Bangalore and Tamilnadu.

(c) From urban slums of Choolai, Chennai.

Table 4: Varying Epidemiological Observations by Areas with Worst and Best Case Scenario*

	Worst Case Scenario	Best Case Scenario
Areas	Nicobar Tribal, Chennai Slum, Wardah District.	Bangalore
Urban–Rural Distribution	High in Urban Pocket	No difference
ARI (%)	Around 3.0	1.0
Infection Prev (%)		
Age group 0-4 yrs	> 7.0 (U). 2.0 – 3.0 (R)	2.0 – 4.0
Age group 5-9 yrs	22.0 (U), 15.0 (R)	8.0 – 12.0
Disease incidence (Per Thousand per year)	3.0 (U)	1.0
Type of Disease	<div> <div>(i)</div> <div>Disseminating forms (Lymphadenopathy predominant, Prev. 4-6.0 per thousand)</div> </div> <div> <div>(ii)</div> <div>Plum TB</div> </div> <div> <div>(iii)</div> <div>Spine TB</div> </div>	Pulm Fibrotic Shadows (remnant of primary)
TB Mortality in Children (less than 4 years age)	Very high, more than 230 (Per hundred thousand)	About 50, (Per hundred thousand)

(U) Urban

(R) Rural

Table 5: Disease Incidence by Tuberculin Status (Choolai)

	<u>Per Thousand</u>
Initially Infected	9.0
Initially Not Infected	1.0
Newly Infected	20.0

- Specially among those below 10 years
age (type of disease did not differ by status)

Table 6 : Tuberculin Induration Size and Disease (Choolai)

Tuberculin Induration Size (mm)	Mortality (Per Thousand Over 4 Years).
0 – 11	7.0
18 And over	63.0
24 and over	10.38

TABLE 7: Profile of Risk Groups for Tuberculosis In Children @

	Identification of Risk Factors
* Geographical area	* Some urban slums
* Risk of infection in the area	* High ARI (more than 3.0%)
* Age of children	* 0-4 years (50% of crude deaths in Choolai attributed to TB, 80% among tuberculin positives)
* Type of house	* Thatched
* Contact with	* Sputum + Case
* Household case contact	* Highest risk
* Neighbourhood cluster around a case	Risk upto 4 th house from the case household.
* BCG-scar presence	* Not discriminatory for risk
* Tuberculin reaction	
Age 0-4 years	15mm and above
Age 5-24 years	20mm and above
* Time of tuberculin conversion	* Recent converter
* Symptom presence	* Not helpful in discriminating risk

@ Developed on data from Tamilnadu (U) and (R), Bangalore (U) and (R) Wardha and Car Nicobar Districts. (U) Urban; (R) Rural.

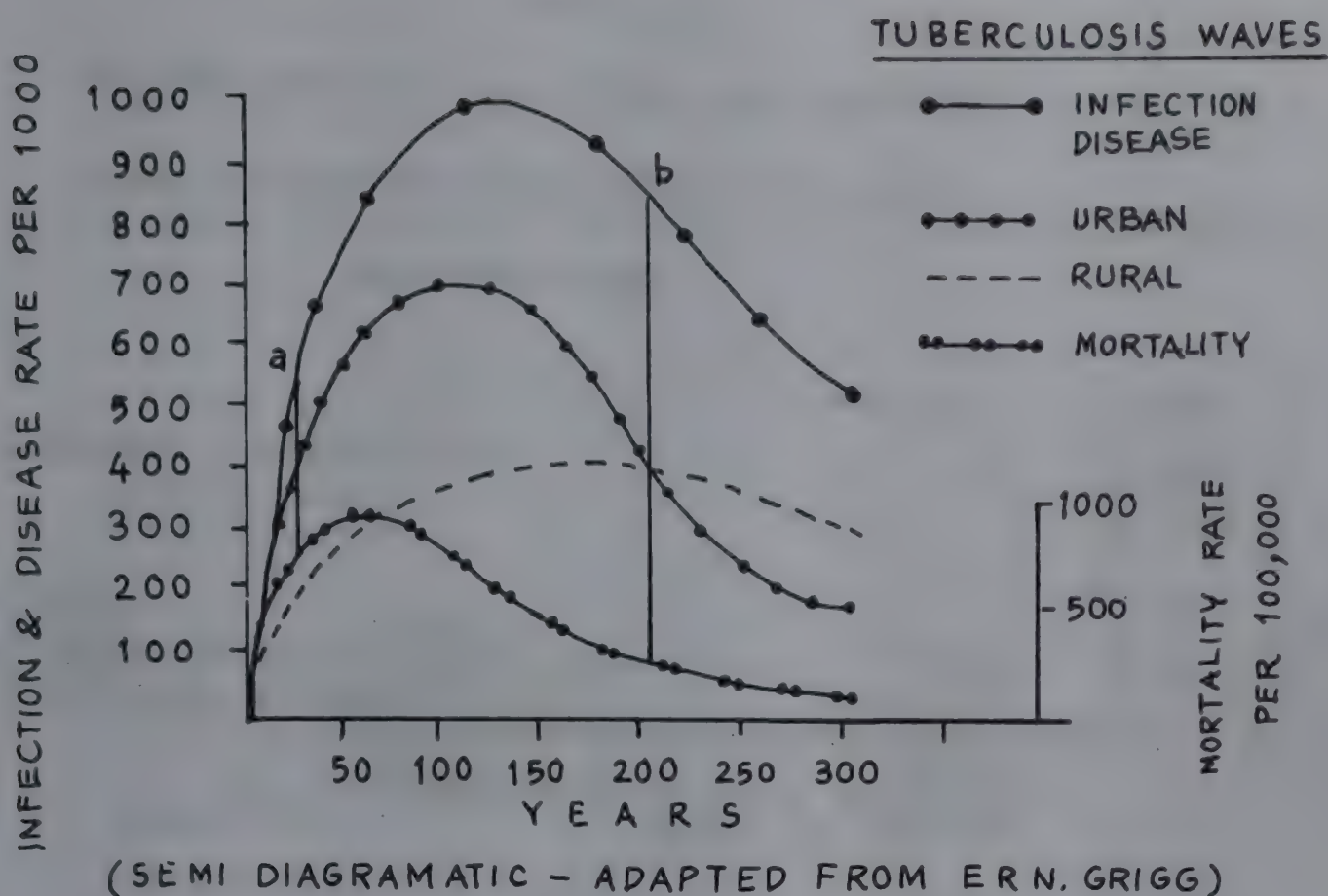


Fig. 1: Development of the wave of tuberculosis epidemic through time.

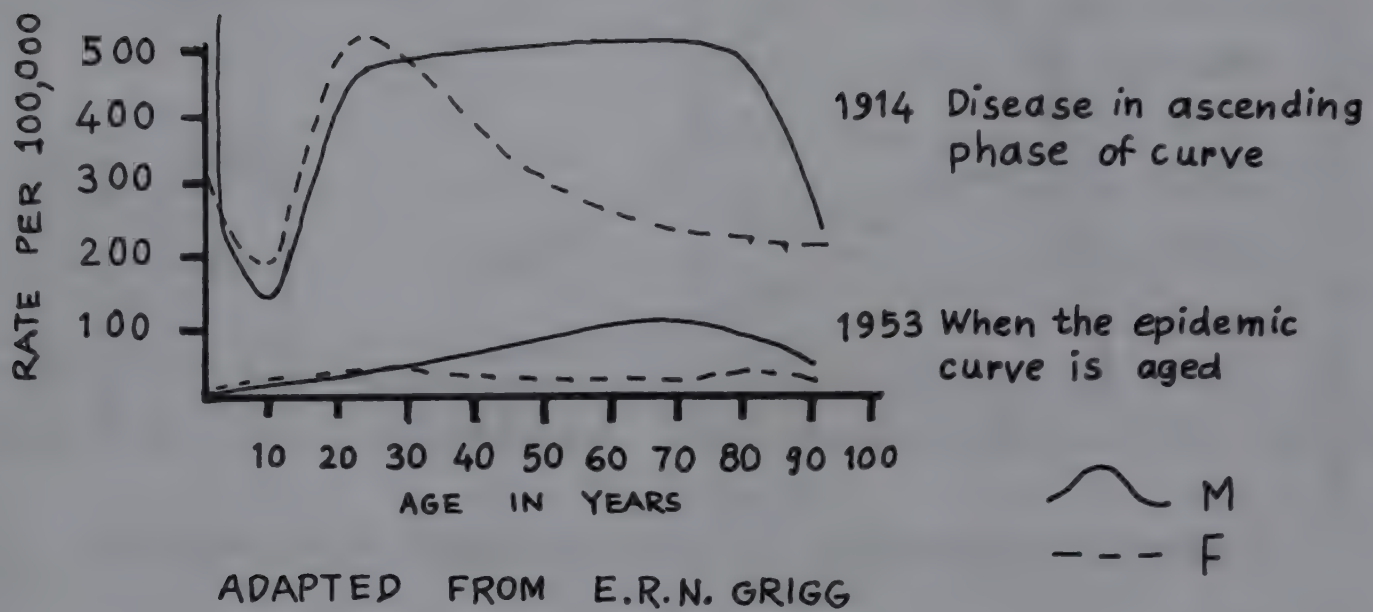
The tuberculosis epidemic curve develops through centuries. The essential proximity of infection, disease and mortality curves characterizes the phase of spread (shown with arrow 'a'). Wide gaps between one and the other rate develop at the peak and descending limb (shown with arrow 'b'). In India, gaps similar to the latter, exist now.

Source: Chakraborty AK²

FIG.2

TUBERCULOSIS MORTALITY BY AGE SEX AND
AGE OF EPIDEMIC (NON - WHITES IN U.S.A.)

(Semi diagrammatic)



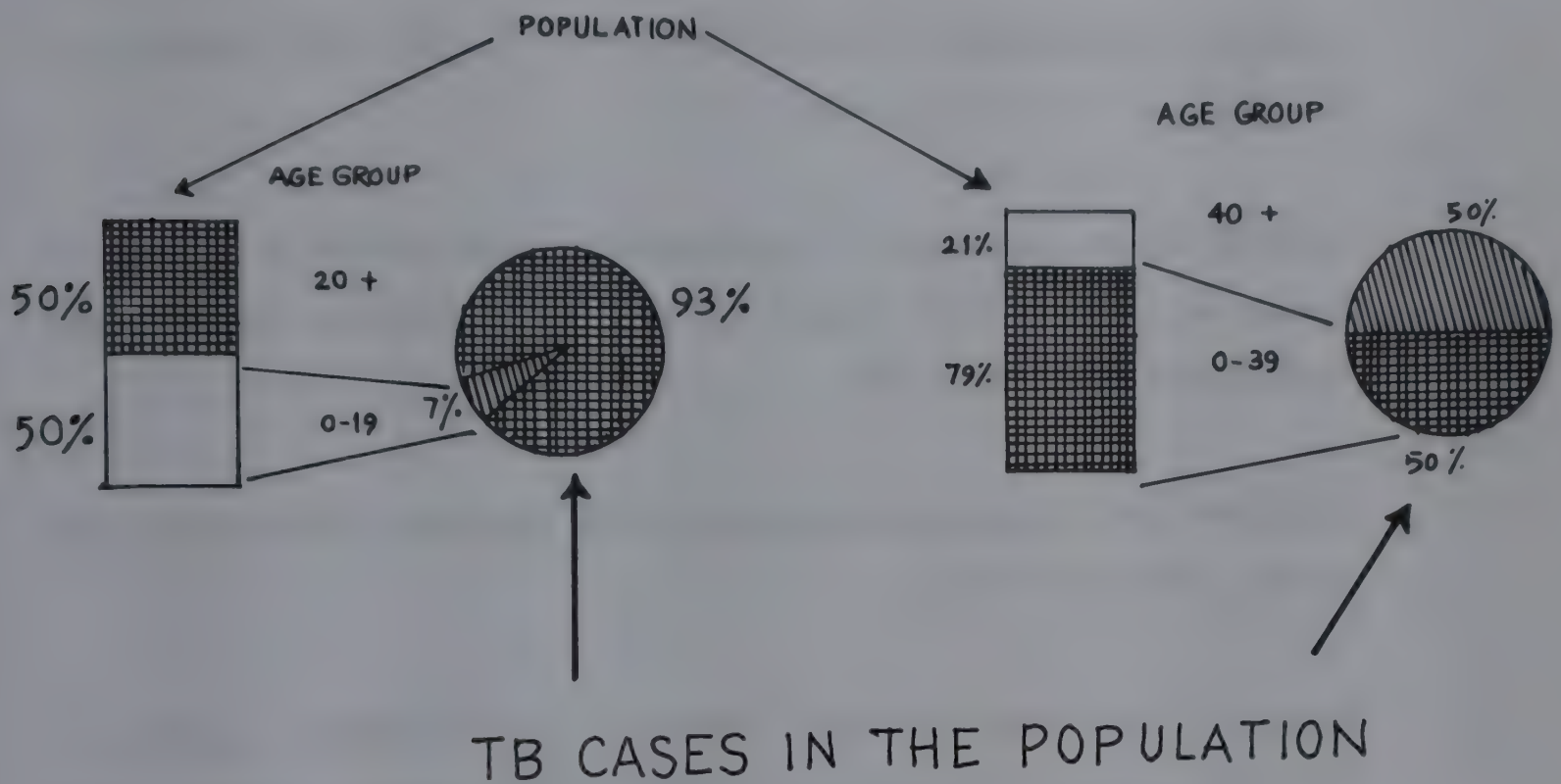
SOURCE : Grigg E.R.N.

Fig 3 Percentage of child contacts infected in three main types of clusters

SP + CASE CLUSTERS	25.8
SP – SUPSPECT CLUSTERS	14.9
NON – CASE CLUSTERS	9.8

Source: Nair, et al.⁹

FIG: 4
DISTRIBUTION OF AGE WISE PREVALENCE
OF BACILLARY CASES IN THE COUMMUNITY

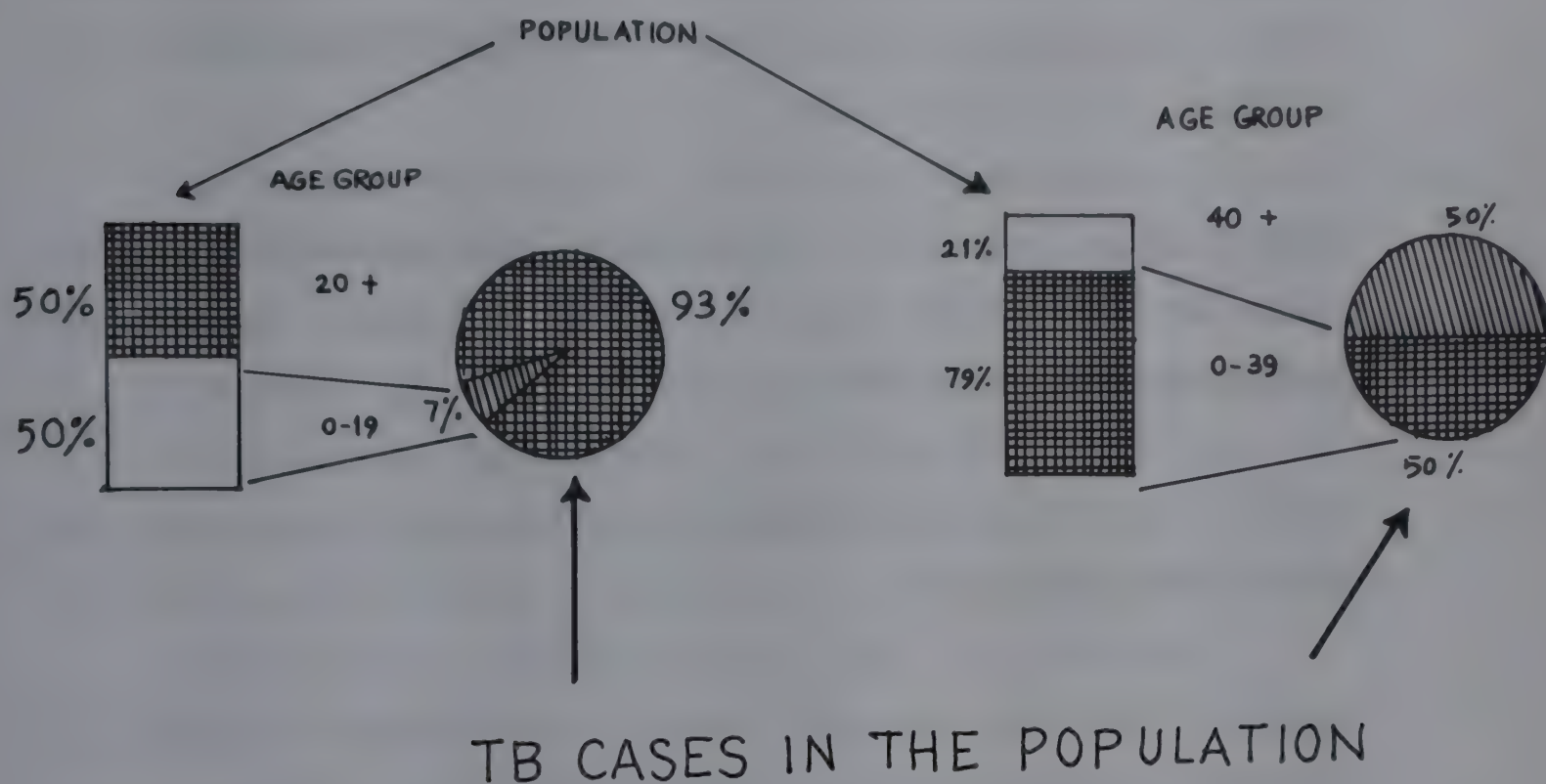


Source: Chakraborty A.K.²

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FIG: 4
DISTRIBUTION OF AGE WISE PREVALENCE
OF BACILLARY CASES IN THE COUMMUNITY



Source: Chakraborty A.K.²

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Pediatric Infectious Diseases in the Next Millennium: Prospects of Prevention and Control

*** Dr. T. Jacob John**

The Three Types of Infectious Diseases

It is well known that we have a large number of tropical infectious diseases affecting children. They include typhoid fever, shigellosis, tuberculosis, helminthiasis, cysticercosis, malaria, kala azar, Japanese encephalitis, dengue fever etc. Although there are national programmes to control some of them, none of them seem to decline in incidence or prevalence.

Being set in the tropical and subtropical zones, India seems to have no advantage in the case of infectious diseases of universal prevalence or for that matter, in the case of well known pediatric infectious diseases of temperate zone. Take for example respiratory syncytial virus (RSV) infection and disease: in temperate zone, RSV is by far the most common and most important cause of viral respiratory disease among infants and toddlers. Our studies in Vellore have confirmed that the same is true even here.¹ We have no special advantage with regards to the susceptibility to diphtheria, pertussis, measles, poliomyelitis, rotaviruses, pneumococci, haemophilus, herpes simplex virus and so forth. Some of them such as diphtheria, pertussis, tetanus, polio and measles are controlled by immunisation. Vaccines against haemophilus (type b), hepatitis B, rubella, varicella, hepatitis A and pneumococci are available in the private market; some of them deserve to be on our routine immunisation schedule.

The third set of infectious diseases are new, emerging or resurgent, not only in India but also elsewhere. Already the first two types of infectious diseases are taking a heavy toll of the lives of our children – infants and pre-schoolers. Our infant mortality

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rate and under – 5 mortality rate have not declined in the last 5 years. The emerging infectious diseases threaten to worsen the situation. I shall illustrate this with three examples.

The human immuno deficiency virus (HIV) reached India only in the mid – 1980's,² but today it is prevalent all over the country, in both urban and rural settings.³ About 1 per cent of pregnant women are infected, resulting in some 70,000 infants being born with HIV infection annually. Yet we are not prepared to face this problem and we have no national policy to prevent vertical transmission, or to treat children with infection.

In south-east Asian countries in which dengue haemorrhagic fever/shock syndrome (DHF/DSS) is prevalent, it is among the most important or most common causes of death. Outbreaks of DHF/DSS began to occur in India since 1987; we may predict that it will become one of the most common causes of death in children in the coming decades.

Prior to the 1970's, Japanese encephalitis was confined to very limited areas in south-western India. In the 1970's and 1980's its geographic prevalence has widened to include most of India. The west coast had been spared of Japanese encephalitis. In 1996, Kerala experienced its first Japanese encephalitis outbreak in history.¹

What Solutions are Available to Us ?

India has not effectively linked health care and public health. Public health cannot grow where even primary health care is inadequate. Child survival and optimal physical growth are goals envisaged under 'health for all' through effective primary health care. The necessary interventions for 'health for all' can be grouped into four. They are like four pillars, each supporting the edifice in part, but for stable support all four are necessary, as illustrated in Fig.-1.

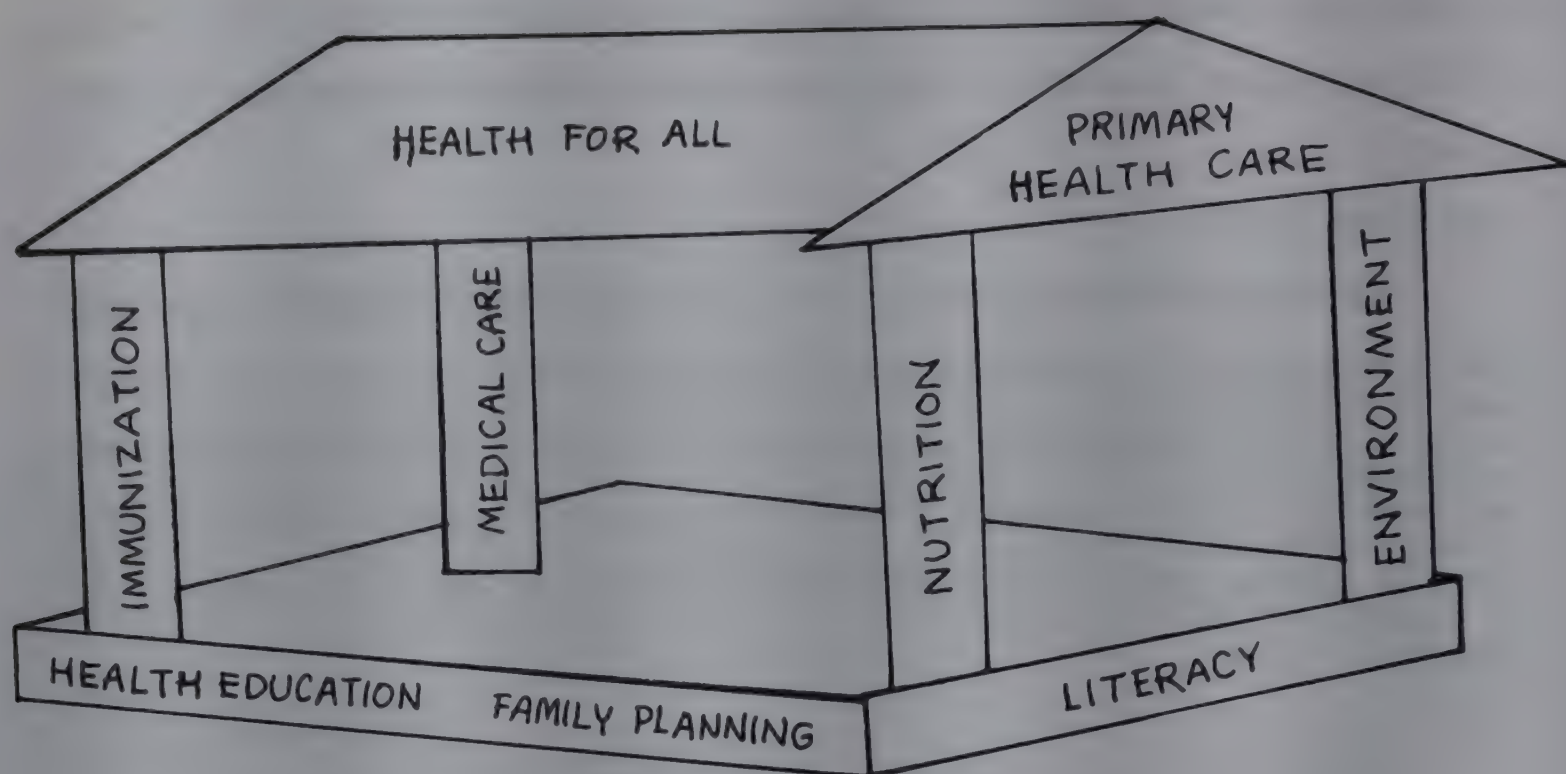


Fig. 1 The Four Pillars of Health for All, on the Foundation of Education and Family Planning

- | | |
|----------------------|---|
| Nutrition : | Reduces mortality in diarrhoea, ARI, measles, tuberculosis and many other infectious diseases. |
| Environment: | Reduces water-borne and vector-borne infections |
| Immunisation: | Protects against target diseases, irrespective of nutrition, environment or medical care |
| Medical Care: | Early and correct diagnosis and therapy reduces mortality in diarrhoea, ARI, meningitis, sepsis and others. |

Immunisation: India must be open to the adoption of newer vaccines to the current list of old and inexpensive vaccines. Vaccines against hepatitis B, congenital rubella syndrome and haemophilus type b meningitis and pneumonia are of high priority. As these are more expensive than the older vaccines, innovative cost-sharing mechanisms should be evolved so that the government provides them free to the poor, while those who can afford may purchase them.

Medical Care: Although health workers, subcentres, community health and primary health centres, taluk hospitals, district hospitals and teaching hospitals are widely distributed, they are not linked effectively; referral system does not function. Therefore, the responsibility of health care and public health of a given community is not undertaken by the government health care institutions. This leads to inefficiency, ineffectiveness and inequity of medical care. The rich purchase primary health care from the private sector. This systemic deficiency must be rectified.

Nutrition: Calorie deficiency appears to be more due to lack of awareness than lack of availability. Micronutrient deficiency, on the other hand, may be dated to our predominantly vegetarian diet. Supplementation of vitamin A may have the potential of reducing a small proportion of death in young children. Zinc supplementation may have a role in protection from acute diarrhoea progressing to persistent diarrhoea.⁵

Environment: The increasing prevalences of Kala azar in Bihar and malaria in many States, the widening geographic prevalence of Japanese encephalitis and the recurrent outbreaks of DHF/DSS are all the result of environmental degradation and the uncontrolled breeding of their respective vectors. We have not been able to provide safe drinking water or safe disposal of human excreta, to large segments of population, urban and rural. The very high prevalence of water-borne or faecally-orally transmitted infectious diseases such as cholera and typhoid fever bear testimony to this.^{6,7} There is great potential for corrective interventions at the local level in many communities.

Conclusions

The problem of pediatric infectious diseases will worsen in the early years of the new millennium and India needs to prepare itself to counter this set back. Several steps are needed. Health care and public health must be linked at the local level. Within the district, all health care and public health initiatives and interventions must be integrated. Microbiology diagnostic support service must become available within every district. Such decentralization of responsibilities must be accompanied by the establishment of tools to assess how far the health care and public health system becomes action and result oriented – and accountable for the health, survival and growth of children. Opportunity for self – reliant design in improving the health of children is already knocking at the door: are we ready for the next millennium ?

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Unmet Health Agenda with Special Reference to Children Especially in Difficult Circumstances

***Dr. Nandini Mundkur**

It is widely accepted that large section of any developing society face some form of deprivation. The impact of this deprivation upon the concerned section varies on a series of factors, most relevant are the nature and severity of deprivation, coping capacity of the individual, duration of exposure and the ameliorative facilities available. Therefore children in difficult circumstances are the victims of urbanization due to inadequate civic amenities and high-density population and inadequate health facility in rural remote centres. Lack of education, unskilled work force, poverty and deprived women population in every sphere adds to the malady.

In this scenario the deprived child belongs to a category, which deserves special attention as external factors on one hand, deprive them of a childhood and on the other, virtually assure an insecure future.

In a recent study conducted by a group in Bangalore (R.Padmini), revealed that out of 4.5 million population over 451 sq.km with a growth rate of about 3.55 per cent Bangalore has 26 per cent of its population living in 778 slums, 55 per cent of the population live below poverty line and 37 per cent are classified as unskilled washers. Density of population in the slum is 506 person per acre. Most of these slums are located along the railway line, low-lying area very often affected by floods, water logging and fire accidents.

The environment was found to be a critical factor influencing zone line of the children. Only 75 per cent get drinking water on alternate days for 3 hours in the early morning and there is one tap for 175 households. In one slum it was seen kitchen work water being used for washing clothes and utensils, 25 – 28 per cent have toilet and only 2 per cent have bathing facility. Children defecate in front of the houses. Most people bathe only once a week.

Chief Executive, Children's Hospital, Bangalore

Box - 4

Child in India : Legislative Support

1890	The Guardian and Wards Act
1929	The Child Marriage Restraint Act (Amended in 1979)
1948	The Factories Act (Amended in 1949, 1950 and 1954)
1956	Hindu Adoption and Maintenance Act
1958	Probation of Offenders Act
1960	The Orphanage & Other Charitable Homes (Supervision and Control) Act
1986	Juvenile Justice Act
1986	Immoral Traffic Prevention Act
1986	The Child Labour (Prohibition and Regulation) Act
1992	The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply & Distribution) Act
1994	The Pre-natal Diagnostic Technique (Regulation, Prevention and Misuse)
1996	The Persons with Disabilities (Equal Opportunities, Protection of Rights & Full Participation) Act

The major occupation of children was fetching water and fuel. The health statistics, revealed by women and child development department shows only 40 per cent of children are covered basic by immunization. About 72 per cent children suffer from respiratory infection, 47 per cent from diarrhoea, and 15 per cent measles. Almost 40 per cent of girls were married before the age of 18 years.

Although the corporation hospital is only one and half kilometer from the slum 26 per cent of women deliver in the house, 13 per cent by untrained mid-wives. Many of the slum dwellers preferred to go to private practitioners rather than face the rude government doctor and wait in the queue. An average household spends 5- 13 per cent of its income on medical expenses. Malnutrition, scabies and tuberculosis were rampant.

For every 1000 children enrolled, only 29 per cent go to 4th Std., 24 per cent leave school by 1st Std. The anganwadi workers in the slum area do not provide non formal education but only distribute food.

Status of Working Children

Street children, rag picking, coolie, hotel workers, beggars, boys work in garage, as well where as girls are employed in household and in agarbathi factories. The long working hours, 8 – 10 hours, often injuring their tongue and fingers while splitting the sticks. They earn Rs.10 for 1000 bathi. Most girls were anemic, malnourished and also suffered from aches and pain in the joints. Many of the children in streets virtually had no support with disintegrated families abused, neglected and exploited and sexually abused.

Adolescence – India has 190 million populations in the age group of 10 – 19 years. Many of them growing in an unprotected environment exposed to violence, sexual harassment of women, beaten and growing in hunger. Fear, emotional out bursts, depression, poor self-image, impaired relationship, increased suicidal tendencies were the major mental health problems. The physical health problem were due to bad foundation

Box - 5

Children in Difficult Circumstances: The Facts

- *For a Girl Child, the period from Infancy to Adolescence is a perilous path.*
- *Approximately more than a quarter of India's population comprises girls upto the age of 19 years.*
- *The Girl Child has a natural biological advantage over the boy child, but in India social disadvantages outweighs the genetic advantage of girls.*
- *Traditional attitudes, beliefs and practices are the uneven odds against the girls child.*
- *Every year 12 million girls are born. Out of this 3 million girls do not survive to see their 15th birthday.*
- *Sex Ratio is unfavourable to girls and women, the main reason for this being the higher female mortality at all age levels.*
- *At each age level, there is a large number of "Missing Girls" i.e. comparatively less girls than boys. The number of 'Missing Girls' is 4 million in the age group 0-6 years, 7.8 million in the 0-14 years age group and 13.34 million in the age group 0-19 years.*
- *Risk of dying is 43% higher for girls between the first and fifth year.*
- *Sex bias in health care accounts for higher female mortality and poor girl child survival. Fewer resources are invested on a girl's health – expenditure on treatment of girls is less than half of that of boys.*
- *Nutritional status of girls in terms of quantity and quality is poor. The root cause is not so much the lack of value attached to the girl child. Boys have access to higher value foods.*
- *Girl infants are breastfed less frequently, for shorter duration and over shorter period than boys.*
- *For a Girl Child, adolescence is a period of physical stress and depletion. Nutritional needs of girls during adolescence are generally ignored, which leads to stunting, and complications during child birth and pregnancy.*
- *Early marriage and early pregnancies result in physical wastage, birth complications and low birth weight babies.*
- *Girls form more than half of all illiterate children in the age group 5-9 years*
- *For every 10 girls who enter Class I, only 6 reach Class V, or one-third drop out before class II.*
- *The Girl Child in especially difficult circumstances is thrice disadvantaged on account of poverty, minority status and gender.*
- *There are 4,00,000 child prostitutes in the country.*
- *Destitute and abandoned girls are victims of exploitation and sexual abuse.*
- *Adolescent girls are vulnerable to all kinds of violence.*

of health in early years and due to exposure to alcoholism, HIV infections, teen pregnancy, learning problems stemming from poorly equipped life skills. Accidents and injuries in the work site as quarry workers, garage helpers and beatings and scalding in hotel worker, poked with sharp instruments and given left over spoiled foods.

About 12.5 per cent of sex workers were children and girls were often the victim of incest in the family abused, even by their own father. There was a direct relation to child working and failure of school enrollment. **Growing in these difficult circumstances children were aggressive, abusive, sexually provocative, willing to resort to anything to survive.**

They enjoyed watching cinema; most of them did not feel education would be beneficial now. As on today no government policy exists for the adolescence, who contribute to nearly 20 per cent of the population? Above all, the doctors and para-medical are poorly equipped to deal with these children.

Should we step into the next millennium with 20 per cent of population not addressed in their health and their problem? The existing services by a handful of NGO are like drop in the ocean. This silent emergency is to be addressed at once and an immediate action plan has to be formulated.

Recommendations:

- Need for a comprehensive policy for adolescents
- Enact child labour laws
- Target the urban slum population as most vulnerable group
- In service training for Govt. officials, doctors, community leaders and girls on knowledge attitude and behaviour of children and optimise strategies in time bound manner to achieve set targets.
- Need for a coordinated action between government, NGO, NIPCCD and pediatrician.
- Introduce normal development, sex education and life skill training in schools

- Address the needs of girl child in preventing anaemia and micro nutrient deficiencies
Rubella immunization considering each one of them to be potential mother.
- Start youth centre for comprehensive informal education in health counselling and support to the needy children.

Child Care Practices Including Home Remedies

*** Dr. P.K. Misra**

Childhood mortality and morbidity is reflection of not only of the availability of medical and health services but is affected to a great extent by the prevailing child care practices which in turn are governed by socio-cultural practices, beliefs, literacy and socio-economic status, etc. of the community. The importance of child care practices can not be exaggerated in a country which has a high infant and child where in mortality and more than 60 per cent of the children below 5 years of age are entering the next millennium with malnutrition.

Our national MCH status indices are far lagging behind the targets to be achieved by 2000 A.D. (Misra & Gupta, 1996) particularly in backward States like Uttar Pradesh, Rajasthan, Bihar, Orissa, etc. Child health affections start from the unborn period i.e. foetal life, and the care practices during pregnancy, at birth, neonatal period, affect the outcome in perinatal, neonatal, infancy periods and may even be responsible for developmental sequelae in children. More than half of the infant deaths that occur, take place in the first four weeks of life and more than one fourth in the first week.

In a survey in Uttar Pradesh, antenatal care during pregnancy was taken only by 40 per cent of rural women (NFHS 1992-93) as majority thought it was not necessary to have it, and 15 per cent had lack of knowledge of services. Tetanus toxoid vaccine was taken by only 37.4 per cent women while 6.6 had only one dose, iron folic acid tablets were taken by 25 per cent of rural women. Recent data from Uttar Pradesh (1998) showed that home deliveries accounted for 88.5 per cent of deliveries and about 82.8 per cent of them were conducted by untrained personnel. Similar is the trend noticed in other States with high neonatal mortality rate (NMR) viz. Rajasthan, Bihar, Orissa and Madhya Pradesh while institutional deliveries were 90 per cent in Kerala. Majority of the

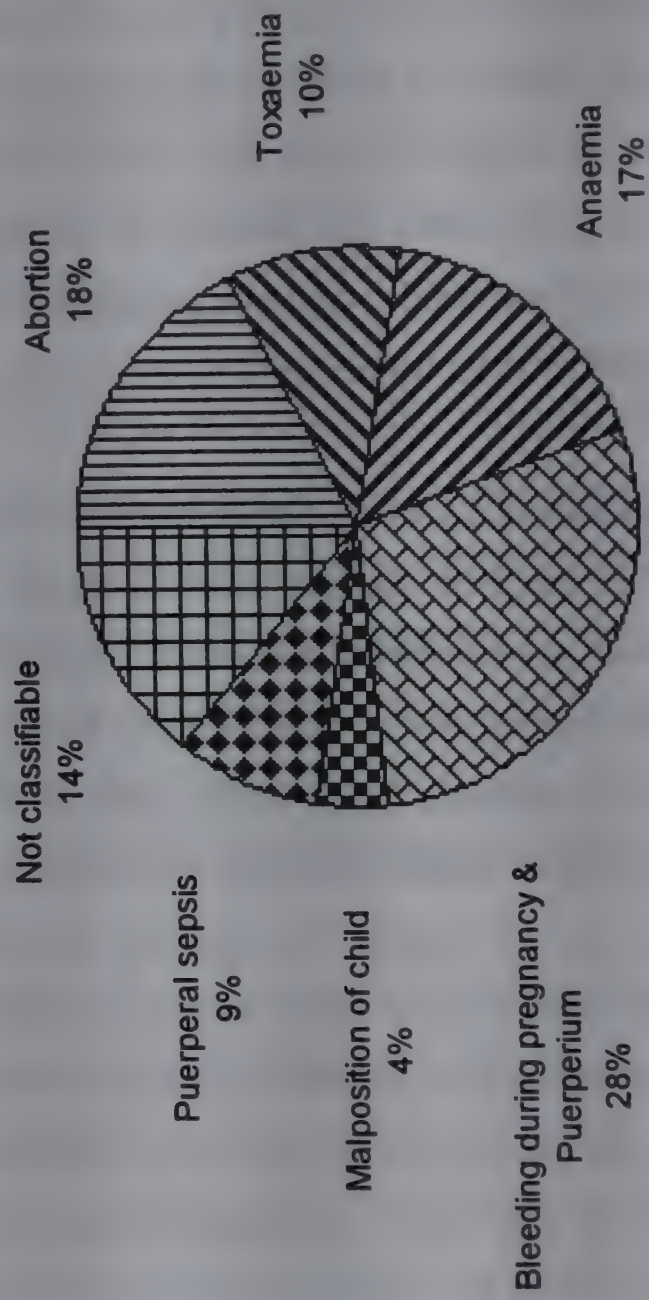
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home deliveries are conducted by family members who do not take proper care including aseptic precautions during delivery, tying of cord and care of newborn, etc.

In a multicentric study supported by Indian Council of Medical Research (ICMR) on maternal and child health (MCH) care status conducted by us (1986-91) in rural areas, the place of delivery in the house was not hygienic in majority – a poorly lighted, ill ventilated room with kachcha floor, sometimes even a place meant for keeping animals was used for delivery. National figures for deliveries by trained personnel was 41.3 per cent (1992) and antenatal care was taken by 82 per cent (1993). It has been reported in a study from Delhi (Sharma and Bali, 1994) that majority of traditional birth attendants (TBAs) (83.64 per cent) did not wash hands; vigorous patting and holding upside down was the commonest method used by them for neonatal resuscitation.

Maternal health and malnutrition are key determinants of health and well being of child which significantly affect the birth weight. National figure of low birth weight (LBW) newborns is 30 per cent. As mentioned earlier iron and folic acid tablets (IFA) were not consumed by majority in rural area of high IMR and 87.5 per cent mothers were anemic, 13 per cent were severely anaemic (NIN, 1993). Some of the practices of caring for newborn are encouraging such as keeping the baby with the mother, proper clothing especially covering his head, use of '*angithi*' for keeping the room warm (at times harmful if kept inside for long period and at nights as well), restricting the visitors and not allowing mother to do household work including cooking for 40 days - as mother is thought unclean - thus giving her rest and devote more time in the care of the infant. Use of *kajal* is quite prevalent which can lead to eye infection while massage of the baby practiced universally is useful. Only 4 per cent of the newborns in rural area are weighed (NFHS 1992-93).

Percentage of Deaths by Causes Related to Child Birth and Pregnancy, 1995



Feeding Practices

NFHS (1992-93) showed that exclusive breast feeding in 0-3 months children was only 5 per cent and complementary feeding in 6-9 months was 31.4 per cent in more than three fourth of the newborns (Singh, et al 1997) no colostrum was given, a variable number 30-70 per cent gave first breast feed within 24 hours, earlier in urban than in rural & tribal areas and in illiterate mothers. Prelacteal feeds were given in majority (70-90 per cent) comprising of sweetened water, animal milk, honey, powder milk, through spoon, finger tip/cotton/bottle. Breastfeeding is delayed in cesarean section cases where it is between 1-3 days. According to NFHS (1992-93) data on Uttar Pradesh only five per cent began breast feeding within one hour of birth, even within 24 hours was only in 12 per cent, one third babies are given water or other supplementary feeds between 4-5 months and in 20 per cent even between 0-1 month. Median length of exclusive breastfeeding was 2.5 months and with water 5.4 months. In Bombay slums also (Bardekar et al, 1994) exclusive breastfeeding was seen only in 37 per cent upto 4 months while in Haryana amongst Schedule Castes it was only in 15 per cent (Kapileta, 1994). In a study from Karnataka in 1996, 35 per cent did not breastfeed even at 48 hours, exclusive breast feeding was only in 72.5 per cent at three months. In a study from Uttar Pradesh 77 per cent were exclusively breastfed till 9-12 months.

The duration of breastfeeding has been found to vary with rural/urban residence, literacy, socio-economic status, psychological status, sex of the child, etc. NFHS (1992-93) study showed mean duration of breast feeding as 26.7 months. Solids are in general introduced late, only 13 per cent between 6-7 months and by 14-15 month in 74 per cent. Only 20 per cent of infants in the age group of 6-9 months received solid food and breast milk both. Majority (80%) diluted milk upto three times with water and even constituted powdered milk was also overdiluted.

Type of feeding was affected by common childhood illnesses. Items believed to be 'cold food' like curd, butter milk, oranges, fruit juices were not given during episode of cough, cold, dyspnea, while 'not foods' like ginger with honey tea, egg, meat were

preferred. During diarrhoea light food like khichri, diluted milk, bananas, curd and *isabgol* husk with curd were given. In majority there was delayed starting of breast feeding low exclusive breastfeeding in early infancy, delayed weaning and prolonged breast feeding beyond two years in more than 50 per cent in the rural community.

Immunisation:

National data in 1992-93 on immunisation in infancy & pregnant women are 87.6 per cent and 81.6 per cent respectively. Immunisation is better in urban than in rural areas. NFHS data on Uttar Pradesh (1992-93) showed only 15 per cent children were vaccinated by 1 year. 25 per cent received measles vaccine after 1st birthday. All the three doses of DPT & OPV were given in 37.8 per cent and 26 per cent only had measles vaccine. Utilisation of immunisation services are poorer in rural than in urban areas, children of SC & ST, low socio-economic status and illiterate mothers.

However, in the recent years, demand for immunisation services are high and immunisation coverage level have doubled since 1985 – 86, dropout rates have reduced and children are being increasingly brought to the immunisation session at right age. Reasons of immunisation failure in rural & slum areas in particular are mainly due to lack of information (nearly 50 per cent) and lack of motivation. There has been a good response to pulse polio immunisation in the country including Uttar Pradesh wherein coverage was around 96 per cent in the year 1998-99. However, routine polio and other immunisation under UIP has dropped and is around 55 per cent.

Care Practices During Common Illnesses

Diarrhoea

In household care management survey from Orissa and Maharashtra (1992) showed ORT use rate was varying between 33.7 per cent – 39.6 per cent, ORS use rate in Orissa was 3-4 per cent. Home fluids rate was around 30 per cent and a high drug use of

35-50 per cent. In a study from rural Delhi (1996) only 40 per cent mothers correctly prepared ORS. In another study from Delhi (1995) even in the educated mothers only 31.6 per cent had knowledge about composition of ORT, its constitution and utility in diarrhoea. Nearly 20 per cent preferred to have complete dietary restriction during diarrhoea and 55 per cent preferred antimicrobial drugs. Household remedies are used in nearly 20 per cent cases (Dhawan et al 1988) which include *saunf*, *podina*, *ajwain*, *isoabgol husk* etc.. Milk was given only in 21.2 per cent that too diluted or curdled milk. Majority gave water adlibitum, commonsalt was sometimes added.

Acute Respiratory Infections (ARI)

There is a high mortality in children suffering from ARI as they are either not brought to the hospital or brought too late. According to NFHS data for Uttar Pradesh (1992-93) only 68 per cent of children suffering from ARI were taken to a health facility for treatment and 15 per cent of children with ARI did not receive any treatment. Home remedy was used in less than 10 per cent. More male children were given treatment (73 per cent) than female children (62 per cent). More urban children (87 per cent) are taken to a health facility than rural (54 per cent). A positive relationship exists between the education of the mother and percentage of children taken to a health provider. Children of higher birth orders, children in rural areas, children of illiterate mothers and children of Hindu mothers and of Scheduled Caste mothers are likely to receive home treatment.

Fever

Nearly 71 per cent children having fever were taken to a health facility (NFHS 1992-93) and nearly half of them (47 per cent) were treated with antibiotics in the form of pills or syrup and 26 per cent were given injections.

Home Remedies

There is gross underutilisation of preventive, health promotive and curative services. There is a considerable gap between providers and consumers. In a study from rural Rajasthan (Bhandari et al, 1989) found that curative health services were utilized by only 18 per cent and 56 per cent infants died in neonatal and post-neonatal period respectively, showing thereby that neonates are badly neglected for receiving medical treatment. Indigenous method (magic, ritual, religious), herbal and nature measures are utilised by many. About 86.5 per cent of infants, who died, first received indigenous treatment. Home remedies/herbal treatment were used in 14.8 per cent cases of ARI, 6.5 per cent cases of fever and 31.7 per cent cases of diarrhoea. In other study from rural areas of Rajasthan (Singh 1994) for diarrhoea, 31.3 per cent of mothers used *Isabgol husk* mixed with curd, 14.7 per cent gave extra of *tea leaves*, *ajwain*, *peepalmul*, *sonth*, *black pepper* and *tulsi leaves*. Other herbal drugs used were *jawa harra* (myrobelan) *nutmeg*, *saffron*, *Javitri (mace)*, *ghutti* etc. During measles in more than 50 per cent of cases, mothers gave *nutmeg*, *mace*, *cloves*, *tulsi*, *raisins* boiled in water, 6.7 per cent *saffron* in milk, 6.7 per cent *tulsi leaves*, *clove & sonth* in boiled water.

Kumar et al (1981) observed that in Haryana, half of all rural and urban mothers believed in trying home remedies as first step in treatment of diarrhoea and considered herbal tea, mint water and lemon juice useful in illnesses. In a study from Delhi (Misra et al 1994) *honey* and *ginger* were most commonly used (27%) home remedies for relief of cough in lower respiratory tract infections.

To sum up, traditional practices, beliefs, and customs coupled with illiteracy, lack of awareness about health facilities, their inadequate utilisation, at times inadequate/availability of health and medical facilities, and poor health education make prevalent child care practices important determinants of childhood (at all ages) mortality and morbidity.

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Modifications in National Immunization Schedule

* A. Parthasarathy

National Immunization Schedule formulated for a country should be epidemiologically relevant, immunologically appropriate, and technically sound, socioculturally acceptable and economically viable. The vaccines chosen for inclusion should be available free of cost to the beneficiaries targeted for. Each vaccine thus included will satisfy three important criteriae viz., necessity, safety and efficacy. The WHO guidelines for its member nations on routine childhood and antenatal immunization, should be followed as far as possible depending on the epidemiology of the vaccine preventable disease in that country/region whenever a national immunization schedule is designed.

The Universal Immunization Programme (UIP) schedule formulated in 1985 for India thus fulfills the above described criteriae, which has resulted in marked decline in the number of cases of neonatal tetanus, diphtheria, pertussis, poliomyelitis and measles. Not only the morbidity has been brought down significantly mortality too has been reduced creditably. The efforts need to be sustained, to obtain the wholesome objectives of the UIP viz., poliomyelitis eradication, NNT elimination and reduction in measles cases and deaths. However, certain other communicable diseases for whose prevention, vaccines are readily available, have also to be taken care of, by adding some new vaccines and advocating extra doses for certain existing vaccines in the UIP schedule.

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In the Indian situation, today, we need to urgently debate on the need for the following newer vaccines and also on the necessity of additional primary/booster doses for certain EPI vaccines:

Newer Vaccines for Inclusion in UIP Schedule

- 1. MMR Vaccine
- 2. Rubella Vaccine
- 3. Hepatitis B Vaccine
- 4. Typhoid Vaccine

Additional Doses for Certain EPI Vaccines

- 1. OPV - 5th Primary dose and 2nd Booster
- 2. DPT - 2nd Booster

Vaccines that Merit future Considerations

- 1. Hemophilus influenzae type b vaccine
At present the UIP schedule includes
 - ◆ 2 doses of Tetanus Toxoid to the pregnant mother at 12 weeks and 16 to 20 weeks
 - ◆ One dose of BCG at Birth or 6 weeks, 3 doses of DPT at 6,10,14 weeks and 4 doses of OPV at Birth, 6,10,14 weeks and one dose of Measles vaccine after 9 months followed by Booster for DPT at 1½ years. In addition, PPI doses are given for OPV on NID's.

Do we need a modification to this National Immunization Schedule? If yes, why? How? And when?

Let us analyse the vaccine currently recommended at the UIP schedule and other vaccine given now or to be given in the future at the various age groups:

At Birth

Currently, UIP in India recommends BCG to all newborns and OPV to newborns born in hospitals in major cities as the vaccines to be administered at birth. The Indian Association for Study of the Liver (INASL) in 1996, The Indian Academy of Pediatric (IAP) in 1996 and The National Consensus Meet organised by the National Institute of Public Cooperation and Child Development (NIPCCD) in 1997 and the IAP again in 1999 in its policy statement have very strongly recommended the inclusion of Hepatitis B as a 3rd essential antigen to be administered at birth alongwith BCG and OPV for the following reasons:-

- i) The national average for HBsAg carrier rate in India is 4.7 per cent.
- ii) The HBV exposure rate, determined by anti-BHs positivity, ranges between 17-52 per cent in the adult Indian population. It increases with age. Even at birth it is higher in South than North India. Majority of the children are exposed below 15 years and most of them below five year of age.
- iii) The national average for HBeAg positivity, in BHsAg carriers, is 24.4 per cent (Range 2.6% - 59%). The anti-HB positivity is reported between 26 per cent - 60 per cent.
- iv) The HBs Ag positivity below one year ranges between 2.5 per cent – 12.5 per cent.

- v) The rate of perinatal transmission
 - a) in pregnant women who were HBsAg and HBeAg positive → HBV transmission to newborns is 87 per cent.
 - b) In mother who were HBsAg and anti – HBe positive or were only HBsAg positive, the transmission was seen in 19 per cent and 9 per cent of the newborns respectively.
 - c) It seems likely that the HBV transmission in the anti – HBe positive groups, could be due to a mutant form of HBV.

vi) HBV infection in India is responsible for:

a) Acute viral hepatitis (AVH)	:	34 per cent
b) Fulminant hepatic failure (FHP) (adult)	:	22 per cent
c) Chronic non-alcoholic liver disease (CNALD)	:	60 per cent
d) Hepato cellular carcinoma (HCC)	:	70-80per cent

(Approximately 25 per cent of all HBV related chronic liver disease in India has been reported to be associated with mutant HBV infection)

- vii) Thus, there is sufficient data from India to accept ‘Universal Immunization’ of HB vaccine to all newborn babies in India – the most appropriate strategy for controlling and possibly eradicating the HBV infection from India.
- viii) A combined DPT & HB vaccine could be ideally used when first HB immunization is started at 6 weeks or else a monovalent preparation at birth followed by combination vaccine for the 2nd and 3rd doses.

- ix) IAP has re-endorsed its recommendation for the need of universal Hepatitis B immunization right from birth as part of its advocacy to the Government of India (GOI) in February 1999 indicating that HB vaccine should have been incorporated as early as 1996 for developing countries.
- x) The UNICEF price of HB vaccine for universal immunization is only half-dollar.

Based on the recommendations of the various professional bodies and experts, the Govt. of India even allocated a proposal in the memorandum of Finance Commission for the 9th Five Year Plan, worked out the probable cost, but the ray of hope thus created, met with premature death by finally shelving the proposal. Meanwhile sporadic community and school based camps for Hepatitis B immunization for the affordables have since become the order of the day and these camps will not achieve the final objective, of reduction in Hepatitis 'B' carrier rate and its subsequent eradication, which is only possible through Universal Hepatitis B vaccination. More than 150 nations in the world have adopted HB immunization on an universal basis and have started reaping the results. Are we going to ignore Hepatitis B as an innocuous childhood communicable disease? or are we going to be serious about its hazards in adolescents and adults ? as we are marching towards the next millennium we must have a wise thinking, meticulous planning and above all a strong political will in national interest.

At 6,10,14 weeks

DPT and OPV immunization as at present should be continued along with the 1st/2nd dose of HB vaccine as the case may be. In due course of time, these contacts could as well be utilised for a DPT + HB + Hib combined vaccine, once the decision to incorporate HB and Hib vaccine in the National Immunization schedule is finalised. Do we need to include Hib vaccine in the UIP schedule? The issues needs to be debated based on epidemiological data available in India.

At 6 to 9 month

A 5th primary dose of OPV and the 3rd dose of HB vaccine should be given by creating this additional contact. Introducing the whole cell typhoid vaccine at this contact also is an immediate necessity in view of increased typhoid epidemics. Recent studies from Delhi slums has shown a high incidence of typhoid fever in children less than 2 years and epidemics of typhoid have been reported from different parts of the country including health care advanced States like Kerala. The efficacy of acetone killed and dried whole cell typhoid vaccine which retains high Vi antigenicity has been well established and hence the recommendations of Indian Academy of Paediatrics and British Paediatric Association in favour of the whole cell typhoid vaccine which contain typhoid and paratyphoid antigen.

At 9 months plus

Measles vaccine should be administered during this contact as at present and once the measles epidemiology changes, perhaps MMR vaccine can directly be administered at 12 months of age.

12 to 15 months

An additional contact has to be created during these months to facilitate the administration of MMR vaccine. Latest, this vaccine can be administered at 12 months of age for the Rubella component to be highly immunogenic. Will it be possible to postpone the measles vaccine administration to 12 months from the present 9 months regime, has to be answered based on epidemiology of measles infection before a decision is taken on the administration of combined measles, mumps and rubella vaccine (MMR). Industrialised countries have already switched over to MMR vaccine and no more isolated measles antigen is advocated in these countries.

Measles

We need to introduce MMR vaccine in India urgently for the following reasons:

- (i) Immunization coverage for measles vaccine gradually increased from 1.3 per cent in 1985-86 to 86.9 per cent in 1993-94. Though this coverage has been sustained in many States of India, few States have lagged behind resulting in epidemics of measles in these States. Hence a sustained high coverage is mandatory. Wherever a high coverage has been maintained, the decline in measles cases has already been recorded, with the reduction of 90 per cent morbidity and 60-70 per cent mortality. This decline has to be sustained aiming at elimination / eradication of measles.
- (ii) Elimination is the interruption of measles in a geographically defined area and eradication is the elimination of the virus reservoir. Eradication is difficult, because of measles:-
 - a) being highly contagious in nature;
 - b) having lower mean age of infection ; and
 - c) a higher age at which the vaccine is effective.

Mumps

- (iii) Mumps affects children in 2 – 9 year age groups. Parotid swelling lasts for 10 days resulting in loss of school/work days.
- (iv) Epidemic of mumps can occur every 2 to 7 years; Primarily, mumps is a disease of young children. Nearly, 30 per cent of all mumps cases are clinically inapparent.

(v) Complications of mumps include:

- Orchitis in post-pubertal cases (38%), sterility rare, more risk of cancer;
- Mastitis in 31 per cent of female patients over 15 years;
- Pancreatitis in 4 per cent cases, association with diabetes possible;
- Oophoritis rare;
- Nephritis not uncommon but not significant;
- Arthropathy as migrating arthritis and arthralgia more in young adults; and
- Myocarditis usually self limiting but may be severe.

(vi) Experience in USA with MMR immunization has resulted in 98 per cent reduction in mumps cases between 1967 and 1985. The MMR vaccine efficacy in large trials in 95 per cent for the JL strain.

Rubella

(vii) The seropositivity for rubella in India among pregnant women and cord blood samples ranges between 29 to 95 per cent. Multicentric studies have established the predominance of rubella in pregnant women and young children.

(viii) Maternal rubella infection in first trimester of pregnancy is likely to result in birth of malformed baby or induction of spontaneous abortion. In virologically confirmed maternal rubella, risk of transmission to fetus in the first trimester is over 80 per cent.

(ix). Congenital rubella infection results in IUGR, postnatal growth retardation, PDA, pulmonary artery hypoplasia, cataract, microphthalmia, retinopathy, microcephaly, mental and motor retardation, deafness, languages defects, IDDM etc.

(x). The following strategies should be adopted for rubella control:-

a. Strategy for subject:

(i) for eradication of CRS 100 per cent immunization of

All adult women - immediate results

School girls - 10-20 years

Infants - 30-40 years

(ii) A combination of these is suggested, if vaccine acceptance is

Below 84 per cent- Immune adults

Above 84 per cent- Immune children

b. Strategy for operation should:

(i) Achieve and maintain high immunization levels, by

- Immunizing all susceptibles and
- augmenting vaccine acceptance

(ii) Achieve surveillance of rubella and CRS

(iii) Aggressive out-break control with

- early recognition of disease
- improving diagnosis and
- interrupting chain of transmission

A highly efficacious, indigenously manufactured, inexpensive MMR vaccine containing Edmonston Zagreb measles vaccine strain, RA 27/3 strain for rubella and mumps vaccine – L- Zagreb strain, is now available in India and therefore it should not be difficult to include MMR vaccine in the National Immunization schedule for the reasons stated above.

At 15-18 months:

The first booster dose for DPT and OPV should be continued as at present. If Hib vaccination is accepted then a booster for Hib vaccine should also be added at the 15-18 months contact.

At 5 years

At present only DT is advocated as booster at this age. The Indian Academy of Pediatrics recommends DPT instead of DT and also an additional booster for OPV. Cases of diphtheria and pertussis in this age group have since been reported from different parts of the country and hence the need for a second booster for DPT. Similarly with increased coverage of children below 5 years of age with PPI doses, the feasibility of shifting of the mean age of poliomyelitis to 5 years and above should not be ignored and hence the need for a 2nd booster for OPV. However, if 3 dose/5 dose pulsing is taken up instead of the current 2 dose pulsing, second OPV booster dose may not be necessary.

At 10 Years and 16 Years:

The current schedule of giving TT booster doses at these contacts should be continued with a near 100 per cent coverage. Seven doses of TT thus given, will offer protection upto 20 to 21 years of age and a girl thus fully immunized with Tetanus Toxoid will require only a single dose of antenatal TT.

TT for Pregnant Women

Two doses of tetanus toxoid for pregnant women as per the current recommendation should be continued with a 100 per cent coverage along with FIVE CLEANS delivery to sustain the elimination of neonatal tetanus.

From the discussions above it should be evident that India needs urgently a **Modified National Immunization Schedule** incorporating Hepatitis B, typhoid and MMR vaccines. The modified immunization schedule for India could be designed as shown below:-

Suggested National Immunization Schedule for India

Sl. NO.	AGE	VACCINE
1.	Birth	BCG, OPV ₁ , HB ₁
2.	6,10,14 weeks	DPT ₁₋₃ , OPV ₂₋₄ , HB ₂
3.	6 Months	HB ₃ , TYPHOID ₁₋₂
4.	9 Months plus	Measles, OPV ₅
5.	15-18 Months	DPT Booster, OPV ₆ , MMR
6.	5 Years	DPT Booster, OPV ₇ , Typhoid booster
7.	10 Years	TT ₆
8.	16 Years	TT ₇

- Note : 1. For pregnant women 2 doses of TT
2. Hib Vaccine at 6,10,14 weeks with a booster at 1-18 months.

Thus “modified UIP schedule for India the will need the following changes:-

- i. Addition of 1st dose of Hepatits B vaccine at birth along with BCG and OPV;
- ii. Addition of 2nd dose of Hepatitis B vaccine at 6 weeks along with DPT and OPV;

- iii. Addition of 3rd dose of Hepatitis B vaccine at 6 months and 1st and 2nd dose of typhoid vaccine at 4 to 6 weeks interval;
- iv. Addition MMR at 15 – 18 months; and
- v. Replacing DT with DPT 2nd booster at 5 years along with the 7th dose OPV.

These modifications if effected early, will go a long way in controlling dreaded complications due to Hepatitis B, typhoid, mumps, measles and rubella in addition to the control of vaccine preventable diseases already targeted poliomyelitis eradication, neonatal tetanus elimination and reduction in morbidity and mortality due to measles infection. Will the dawn of the new millinneum pave the way for New National Immunization Schedule in India?

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Additional Vaccines: A Need in Next Millennium National Immunisation Schedule

*** Dr. S.L. Mandowara**

Protection from preventable diseases, disabilities and death through immunisation is the birth right of every child. As many parents are adopting small family norm, it is our duty to ensure that every child is fully immunised. The Government of India adopted EPI in 1978 and renamed it UIP (Universal Immunisation Program) in 1985, which is still followed. Under UIP, two vaccines (BCG and Zero dose OPV) are recommended at birth, may be given from the first day until two weeks of age, so that there would be 4 weeks gap until the next contact for immunization at 6 weeks. If the opportunity to give BCG was not available in the neonatal period, it may be given at 6 weeks simultaneously with DPT and OPV.

Three primary doses of DPT and OPV are recommended at 6,10 & 14 weeks of age and one booster of each at 18-24 months of age. Measles vaccine is recommended to be given once at 9 months of age. DT once at 5 years and TT at 10 & 16years have been recommended in children and for pregnant mothers, 2 doses of TT at 4 weeks interval. This is shown in following table 1.

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Table : 1
UIP Schedule: Government of India

Vaccine	Recommended Age
<input type="checkbox"/> BCG	Birth or 6 weeks
<input type="checkbox"/> OPV	Birth 6,10,14 weeks 18-24 months
<input type="checkbox"/> DPT	6,10,14 weeks 18-24 months
<input type="checkbox"/> Measles	9 months
<input type="checkbox"/> DT	5 years
<input type="checkbox"/> TT**	10 & 16 years
** If given for the first time at this age, give 2 doses at 4 weeks interval.	
** For pregnant mothers, 2 doses of TT at 4 weeks interval	

When asked for vaccination in any of the government hospital/health centre in India, most/all officials or functionaries would include vaccines recommended under UIP as described above and same are printed on vaccination cards provided from these centres. There is not extra space/column left on these vaccine cards to write the name of any other vaccine. Of course all the vaccines under UIP are provided free of cost in this country. Are the traditional six vaccines enough to protect a child even in next millennium? In next millennium there is need to include atleast Hepatitis B, MMR & typhoid vaccine in the schedule for national immunisation programme.

I. Hepatitis B Vaccine

In India 3-7% of persons from school age upwards are found to be chronic carrier of Hepatitis B (HBV). In their blood, Hepatitis B surface antigen (HB_s AG) test is positive. Infection with HBV may occur perinatally (vertical transmission), during early childhood (usually intra-familial spread), through sexual contact or nosocomially. The younger the age of infection, the higher the chance of becoming chronically infected as carrier. Children do not get acute icteric hepatitis with HBV infection, therefore pediatricians do not see the consequences of the prevalence of HBV infection. HBV is the major cause of chronic hepatitis, cirrhosis of liver and hepatocellular carcinoma. These are all preventable by early childhood immunization.

In India 68 per cent of chronic liver disease, 80 per cent of all liver cancers and about 1 per cent of all deaths can be traced due to Hepatitis B infections. Hepatitis B is the world's most common blood borne viral infection which is 100 times more infectious than AIDS, kills more people in a day than AIDS in a year, second most important cancer causing agent and 350-400 times more lethal than AIDS. Since India has the 2nd largest pool of carriers (<45 million chronic carriers of them; 10% are highly infectious) hence if it is not prevented by active immunization (vaccine) then Hepatitis B virus infection will certainly be on the rise during next millennium WHO has also recommended the inclusion of Hepatitis B vaccine in the UIP and effective vaccine is now available for prevention of Hepatitis B.

Since 3-7 per cent of all mothers are likely to be HBV carriers, the ideal time to commence HB immunization will be at birth, as early as possible preferably within 12 hours. Three primary doses are recommended: one at birth, second at 6 weeks and third at 6 months and one booster after 10 years of age. For infants who did not receive a dose of HB vaccine in the neonatal period may be vaccinated at 6 weeks, 10 weeks and 6-9 months and 10 years schedule. *There is a strong need to include this vaccine in National Immunization Schedule.*

II. Measles, Mumps & Rubella Vaccine (MMR):-

Mumps and Rubella Vaccines consist of live attenuated viruses. From public health point of view, these vaccines have much lower priority than that of measles vaccines, since these two viral diseases are not associated with significant mortality. However, there is increasing awareness of occurrence of *congenital rubella syndrome*, especially in urban and well to do families. Similarly Mumps apart from causing discomfort rarely causes complications (orchitis, encephalitis). Measles can also occur in some cases even when they have received Measles Vaccine at 9 months of age. ***MMR vaccine is available in India and one dose is recommended to be given at 15-18 months of age.***

III. Typhoid Vaccine :-

Typhoid fever is widely prevalent in India and is a major cause of mortality hence remains a serious disease. It is endemic throughout the country, all year round. Although typhoid fever may occur at any age, the highest incidence appears to be in 5-9 years of age. It is an important cause of absenteeism from school or work. The difficulty in diagnosis and the emergence of strains multi-resistant to antibiotics are the risk factors. Delayed or unsuitable antibiotic therapy increases the number of complications, the mortality rate and the cost of treatment. Presently quality vaccine is available in India (Vi antigen), a single injection SC/IM assures protection for three years. ***Children at 5 years of age must receive this vaccine and repeat dose at the end of every 3 years.***

IV. Optional Vaccines

Vaccines against Rabies, Varicella (Chickenpox), Hemophilus Influenza type B (Hib), Hepatitis A etc. are available in India ***but we are keeping them optional.***

Suggested Immunisation Schedule

A. Compulsory Vaccines	
Vaccines	Recommended Age
♦ BCG	Birth or 6 weeks
♦ HB	Birth, 6 weeks, 6-9 months, 10 years
♦ OPV	Birth, 6,10,14 weeks, 18-24 months
♦ DPT	6,10,14 weeks, 18-24 months
♦ Measles	9 months
♦ MMR	15-18 months
♦ DT	5 years
♦ Typhoid	5 years, Repeated after every 3 years
♦ T.T	10 years, 16 years.
B. Optional Vaccines:	
Hepatitis A, Hib, Rabies, Chickenpox	

Malaria, Dengue Fever and Hepatitis B in Children - Challenges for the Next Millennium and Concept of IMCI.

***Dr. (Prof.) Sunil Gomber**

Several developing countries including India would continue to face the scourge of infectious diseases in the 21st century. There is going to be a continuing threat of infectious diseases especially malaria, dengue & hepatitis B among children.

Malaria

Magnitude of Problem: It is still a major public health problem in India. The total impact of malaria in terms of death & disability is far greater than the impact of HIV. Ninety four percent of Indian population is residing in malaria endemic areas. The disease can be fatal especially in a case of plasmodium falciparum infection. Children less than five years of age are the most sufferers as they present with various complications due to the non-development of immunity among them.

Epidemiology : The incidence & deaths have increased since 1994 due to the occurrence of focal outbreaks in various parts of the country. The proportion of P. falciparum cases has also increased to 15 - 40 per cent which is a major concern. Madhya Pradesh takes the lead in having highest percentage of cases (17%) followed by north-eastern States (9%). Rajasthan (11%), Gujarat (6%) and others.

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The State of Delhi is urbanised with 90 per cent of urban population. The prevalent vector species is *Anopheles stephensi* and *An. culicifacies* has also been found as a vector in some of the rural pockets. The slide positivity rate for Delhi during 1997 & 1998 has been noted to be 0.96 per cent and 0.55 per cent respectively. In one of the recently conducted studies from East Delhi (Sunil Gomber & Lalitha Kabilan - Indian Pediatrics (1999) the slide positivity rate was 1.05 per cent (3 times higher than the reported figure of Delhi) with Pf. infection occurring in as high as 16 per cent of cases. Moreover the study revealed that 60 per cent of cases occurred in children up to 6 year of age. The increased proportion of *Plasmodium falciparum* infection has lead to the development of drug resistance to chloroquine & sulfadoxine - Pyremethamine combination. Chloroquine resistance to *plasmodium falciparum* was noticed for the first time from Assam in 1973. Since than it has been noticed from various other States namely North-Eastern States, Andhra Pradesh, Bihar, Madhya Pradesh, Orissa, Karnataka and West Bengal. The resistance to second line drug sulfa- pyremethamine combination has been noted in low proportions in North Eastern States, West Bengal & Karnataka.

Dengue

With rapid unplanned urbanization, dengue fever is likely to stay with us in the next millennium. One of the important challenges in the 21st century would be to control this disease effectively. Various epidemics have occurred in different States during the last few decades. One such very severe dengue epidemic occurred in the capital in 1996. About 10,000 people had taken ill within a span of few weeks & around 430 people had lost their lives. There is an urgent need to continually update the knowledge on dengue syndrome in order to cope with the challenges in future.

Lessons learnt from 1996 dengue epidemic

a) ***Tourniquet test:*** The tourniquet had a poor sensitivity (29.3 per cent) when carried out on 58 serologically proven dengue cases. The test may thus be negative in

most dengue cases. The sensitivity of this test needs to be re-evaluated on a larger sample.

b) **Hematocrit Concentration:** One of the diagnostic criteria set by WHO of hematocrit increase of 20 per cent from the base-line value presents certain difficulties, as initial hematocrit value is usually not available. Moreover the hematocrit increase of 20% may not be seen in most of the patients because of increased prevalence of anemia in the country.

(iii) **Bleeding manifestations :** One must remember that though thrombocytopenia (Platelet count $< 109/l$) is the hallmark of the disease the bleeding manifestations in these patients could be due to disseminated intravascular coagulation, coagulopathy &/or platelet function defects.

Hepatitis - B

The disease is called a 'silent carrier' as the disease contracted in earlier childhood leads to chronic liver disease primary carcinoma of liver in later years. However there is still no government policy to control it. The WHO recommends 3 doses of 10 ug each of hepatitis B vaccine intramuscularly at 0,1, &6 months. The difficulty with this schedule is that the third dose of the vaccine does not coincide with the vaccination schedule under the expanded programme of immunization (E.P.I.) resulting in increased burden & poor compliance of the vaccinees. The immunogenicity of 3 doses of hepatitis B vaccine co-administered intramuscularly with DPT & oral polio vaccine was studied in 89 infants. Thirty five infants could complete the study protocol receiving the vaccine at 6 weeks, 10 weeks & 14 weeks. The antibodies (Anti HBs) attained at 18 weeks were seroprotective in 34/35 children (97.1%). Moreover the geometric mean titres estimated after 3 doses was 223.92 m IU/ml with 95 per cent confidence interval being 129.11 to 388.34. To conclude hepatitis B vaccine when administered alongwith DPT & OPV at 6 weeks, 10

weeks & 14 weeks is highly immunogenic. Hence it is feasible to incorporate hepatitis B vaccine into the existing E.P.I. vaccination schedule.

Concept of IMCI

It is a strategy of providing Integrated Management of Childhood Illnesses. It encompasses interventions for prevention & management of major childhood illnesses at health facilities and at home. IMCI incorporates activities to control

- Diarrhoeal diseases
- Acute respiratory infections
- Malaria
- Measles
- Malnutrition

Immunization, breastfeeding and nutrition are also included as primary interventions in IMCI guidelines.

The strategy has 3 components:

Component one is to improve the skills of health workers by

- a) Developing/adopting standard case management guidelines.
- b) Training of public health providers.

Component two is to improve the health delivery systems by

- a) Availability of drug & supplies
- b) Organization of health facilities.
- c) Improving referral services.

Component three is to improve the family & community health practices by

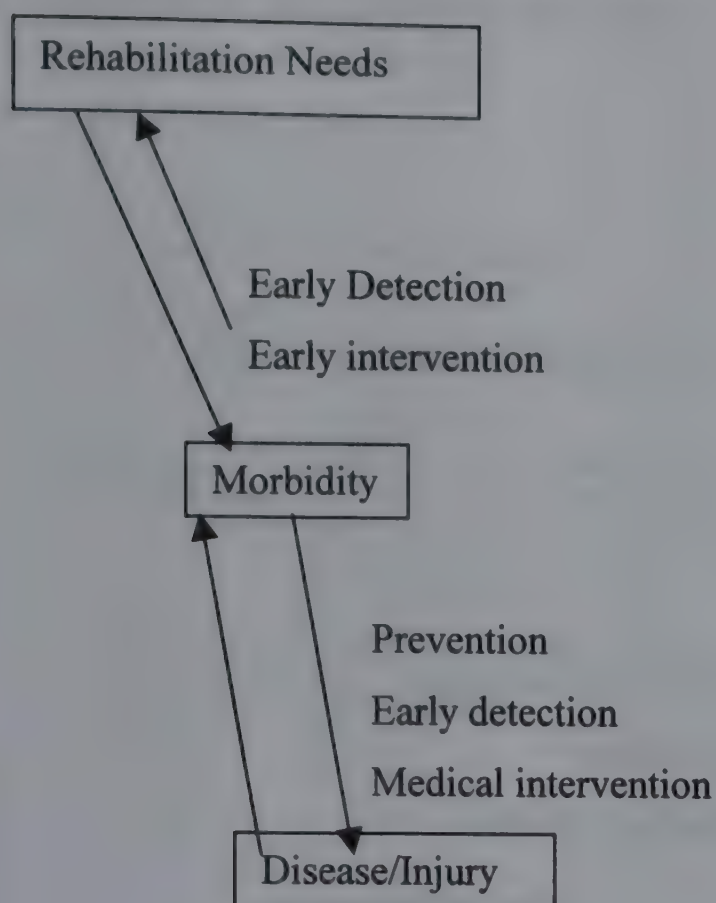
- a) Providing protocols to adapt to the local conditions.
- b) Interventions to improve nutrition.

The strategy is flexible to include conditions important in individual countries like including mass deforming every six months in Nepal, inclusion of maternal health in Burma called as IMMCI & inclusion of dengue control activities in Indonesia. The pitfall of this strategy is that it includes children between 7 days to 5 years and neonates less than 7 days have not been included. However WHO is preparing a separate mother & baby package to include neonates up to 7 days of age.

Relationship of Diseases/Morbidity/Rehabilitation Needs

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Relationship of disease/injury and rehabilitation needs of a disabled child is very straightforward. Every disease or injury amongst children requires early detection & intervention, otherwise it results in some amount of morbidity. The functional defect due to morbidity sometimes is so extensive that the functional reserves in body fail to compensate for loss of function due to this morbidity. Thus, the child becomes a disabled child. The loss of function poses certain threats in day-to-day functioning of the child, which become further aggravated due to restrictive environment of modern living. All these threats demand something special from the disabled child and these demands are called **rehabilitation needs** of the disabled child, meaning thereby the needs, which when satisfied, will fulfil the special demands of the child and hence he will not face threats in his day-to-day functioning.





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If the disease is diagnosed early and prompt and proper treatment is given, he will not be left with many rehabilitation needs. On the other hand, if he is diagnosed late and late and proper treatment is not given, he will be kept with more and more rehabilitation needs.

DISEASE.TRENDS AND PREVALENCE:

GROUPWISE DECREASING PREVALENCE & TREND IN NEXT CENTURY			
Sl. No.	Health Problems	Magnitude of Problem	Expected Trend
I	LOW BIRTH WEIGHT BABIES (B.wt < 2500gms) <ul style="list-style-type: none">♦ Infant mortality rate♦ Under 5 mortality rate	Incidence = 30%.of all live Births <ul style="list-style-type: none">♦ 73/1000 live births♦ 237/1000 under 5 children	
II	MALNUTRITION <ul style="list-style-type: none">♦ Protein energy malnutrition♦ Micro-nutrient malnutrition- Vit. A deficiency- Nutritional anemiaIodine deficiency disorders	Prevalence – 1-2% (mod. To severe) Prev of Vit. A Def. blindness = 6.01% Prev. 70-75% of children <5 years Prev. of goitre = 36%	

III.	<p>INFECTIONS AND INFESTATIONS</p> <ul style="list-style-type: none"> - Diarrhoeal Diseases - Respiratory infections (Pneumonias, Bronchiolitis) - Measles - Polio - Tuberculosis - Leprosy <p>Others – Diphtheria, Pertussis, Neonatal Tetanus, Malaria</p>	<p>Responsible for 19% of under 5 mortality</p> <p>Responsible for 13% of under 5 mortality</p> <p>Responsible for 10% of under 5 mortality</p> <p>Responsible for locomotor disability in 60%</p> <ul style="list-style-type: none"> - Infection-Tuberculine +ve <6 yr. – 20%, <14 yr. – 40% - Occult TB Infection – 8.3 % - Prevalence ranges from In T.N. – 110/1000 children In Mumbai – 3/1000 children 	
IV.	<p>Environment related disorder</p> <ul style="list-style-type: none"> - Lack of safe water supply and sanitation and assoc. diarrheal diseases 	<p>Protected water supply – 17% rural - 47% urban</p>	
V.	<p>Ear Health Problems</p> <ul style="list-style-type: none"> - ASOM - CSOM - Otitis Externa 	<p>Responsible for 9.6% of visits to Paediatricians</p>	
VI.	<p>Eye Health Problems</p> <ul style="list-style-type: none"> - Trachoma - Vit.A defi.blindness - Injuries 	<p>Responsible for 0.2% of blindness Prevalence 6%</p>	
VII	<p>Dental Health</p> <ul style="list-style-type: none"> - Dental caries 		

During the 20th century, medical researches were able to establish ‘Trends’ of various paediatric diseases. It can be declared with conviction that the present ‘Trend’ will continue in the 21st century also. LBW, malnutrition, common infections & infestation, water borne disease, infection of ear, eye & teeth will continue showing decreasing trend in the 21st century also. As they have got direct relationship with disability, the net magnitude of disability due to these diseases will also decrease.

GROUP-WISE INCREASING PREVALENCE & TREND IN NEXT CENTURY			
S. No	HEALTH PROBLEM	MAGNITUDE OF PROBLEM	TREND
I.	GENETIC DISORDERS <ul style="list-style-type: none"> • Congenital malformations <ul style="list-style-type: none"> - Congenital heart disease - Cleft lip/palate - Anencephaly/Spina bifida • Single gene anomalies • Chromosomal anomalies 	2.5% prevalence 0.6% prevalence 0.56% prevalence	
II.	Infections <ul style="list-style-type: none"> • TB (assoc.with HIV) • Dengue fever • HIV/AIDS • Other viral infections- Ebola 	Separate prevalence amongst children could not be found	
III.	Problems relating to pollution <ul style="list-style-type: none"> • Air pollution-Bronchitis, Asthma, • Water pollution – Diarrhoea, Infestation • Radiation exposure • 	Separate prevalence amongst children could not be found	

IV.	Accidents & poisoning <ul style="list-style-type: none"> • Road traffic accidents • Poisoning • Drowning 	- Do -	
V.	Behavioural problems <ul style="list-style-type: none"> • Learning disabilities • Emotional disorders • Functional distress 	- Do -	
VI.	Eye problems <ul style="list-style-type: none"> • Refractive errors 	- Do -	

But the picture will not remain the same in many other paediatric illness in 21st century. Genetic disorders, infections like HIV+ve cases, viral infection, pollution related health hazards, RTA, behavioural problems & refractive errors, will keep on increasing in the 21st century.

HEALTH PROBLEMS LIKELY TO REMAIN THE SAME IN THE NEXT CENTURY

Non-communicable diseases

- Rheumatic heart disease
- Diabetes – mellitus

Malignancies

- Childhood leukemias
- Bone tumors
- Other solid tumors

However, non-communicable diseases like RHD, juvenile diabetes mellitus, childhood malignancy will maintain status quo in next century also.

POSSIBLE NEW PROBLEMS WHICH MAY PRODUCE DISABILITY

I. More use to I.T. Facility

- Internet fever – leading to increasing refractive errors
 - behavioural problems
- More of indoor activities
 - same as above
 - Sex related
Adolescent problems
 - More accident problems

II. Scientific advances in human reproduction

- | | |
|---------------------------------|----------------------------------|
| * Invitro fertilization | Emergence of more |
| * Sperm banking | congenital malformations and |
| * Aided reproduction techniques | behavioural problems in children |

- | | |
|--|---|
| III. Use of newer diagnostic interventions | Hazardous effect on genetic make up of child which is yet to be identified. |
|--|---|

IV. Resistant infection & subsequent disability

V. War-related childhood disability (land mine)

VI. Natural disaster-related childhood disability

The 21st century will bring certain new problems also with fast increasing use of IT, newer researches & scientific advances in human reproduction, highly sophisticated diagnostic intervention, more & more micro-organism becoming resistant to antibiotic & more & more injuries due to warfare & disaster: it is speculated that newer diseases &

complex type of disabilities are in stock for 21st century. Although, actual picture is yet not clear, but some idea is being crystallized in the mind of medical scientists about these problems.

With this spectrum of diseases profile in next century, an endeavour is made to forecast the profile of disability in the 21st century. Following classification, as adopted by GOI & recommended by WHO, is used in grouping the various type of disability.

CLASSIFICATION OF DISABILITY USED IN THIS PRESENTATION
(WHO CLASSIFICATION)

Gr.No. DISABILITY TYPE

1. Difficulty of moving

(locomotor impairment)
2. Difficulty of seeing

(visual impairment)
3. Difficulty of hearing & speaking

(speech & hearing impairment)
4. Difficulty of feeling

(sensory impairment)
5. Difficulty of learning

(mental retardation)
6. Difficulty due to strange behavioural

(psychological/psychiatric problems)
7. Difficulty due to fits

RELATIONSHIP OF INCREASING TREND DISEASES AND DISABILITY IN 21 ST CENTURY				
S.No	HEALTH PROBLEM	DISABILITY GROUP	DISABILITY CODE	GR.
I.	GENETIC DISORDERS		Moving-1	
	• Congenital malformation		Seeing – 2	
	- Congenital heart disease	Respiratory disability	Speech	
	- Cleft lip/palate	3	/Hearing- 3	
	- Anencephaly	5,7	Sensation-4	
	- Spina bifida	1,4	M.R.-5	
			Behaviour-6	
			Fits – 7	

II.	Infections <ul style="list-style-type: none"> • TB (assoc.with HIV) • Dengue fever • HIV/AIDS • Other viral infections-Ebola 	1,3,4,7 6,7,1,2,4,3 1	
III.	Problems relating to pollution <ul style="list-style-type: none"> • Air pollution – Bronchitis, asthma • Water pollution – diarrhoea, infestation • Radiation exposure Accidents & poisoning <ul style="list-style-type: none"> • Road traffic accidents • Poisoning • Drowning 	2, Respiratory disability 1,6, 2,6,4 1,7,4,3,2,6 1,6,2,3 4- Respiratory disability	
V.	Behavioural problems <ul style="list-style-type: none"> • Learning disabilities • Emotional disorders • Functional distress 	5 6,5 6	Moving-1 Seeing – 2 Speech/ Hearing – 3 Sensation – 4 M.R.-5 Behaviour – 6 Fits – 7
VI.	Eye problems <ul style="list-style-type: none"> * Refractive errors 	3	

As one can see from above chart, there are certain disabilities, which don't fall in any of the groups from 1-7, hence its separate name is given under the heading of disability group in the above chart i.e. respiratory disability for C.H.D. Similarly, one

childhood disease can cause more than one disability also i.e. Anaencephaly can cause MR(5), fits (7), locomotor problems (1) & loss of sensation (4). Hence all the numbers of disability group are mentioned against them, but **they are kept in order of frequency**. This was also deliberately done, so that proper ranking of disability group can be attempted. The above chart shows relationship of increasing trend diseases & disability in 21st century. It is clear that locomotor (1) & strange behaviour(6) will be of top ranking as 1st and 2nd groups of disability in children in 21st century. It is also observed that most of the diseases mentioned above produces more than group of disability. The magnitude of disability due to above diseases will definitely increase in 21st century. The forecasted spectrum for 21st century is that locomotor & behavioural group will be first & second rank of disability.

RELATIONSHIP OF DECREASING TREND DISEASES AND DISABILITY IN 21 ST CENTURY			
S.No.	HEALTH PROBLEMS	DISABILITY GROUP	DISABILITY GR. CODE
I.	LOW BIRTH WEIGHT BABIES (B.wt <2500 gms)	5,1,3,2	
II.	MALNUTRITION <ul style="list-style-type: none"> Protein energy malnutrition Micro-nutrient malnutrition - Vit.A deficiency - Nutritional anemia - Iodine deficiency disorders 	5,1 2, 1, 5,6	Moving – 1 Seeing – 2 Speech/ Hearing – 3 Sensation – 4 M.R.-5 Behaviour –6 Fits – 7

III.	<p>INFECTIONS AND INFESTATION</p> <ul style="list-style-type: none"> - Diarrhoeal diseases - Respiratory infections (Pneumonias, Bronchiolitis) - Measles - Polio - Tuberculosis - Leprosy <p>Others- Diphtheria, Pertussis, Neonatal Tetanus, Malaria</p>	<p>-</p> <p>-</p> <p>1</p> <p>1,5</p> <p>1,7</p> <p>1,4</p> <p>-</p>	<p>Moving – 1</p> <p>Seeing –2</p> <p>Speech/</p> <p>Hearing – 3</p> <p>Sensation – 4</p> <p>M.R.-5</p> <p>Behaviour-6</p> <p>Fits – 7</p>
IV.	<p>Environment related disorder</p> <ul style="list-style-type: none"> - Lack of safe water supply and sanitation and association diarrheal diseases. 	1	
V.	<p>Ear Health Problems</p> <ul style="list-style-type: none"> - ASOM - CSOM - Otitis Externa 	3	
VI	<p>Eye Health Problems</p> <ul style="list-style-type: none"> - Trachoma - Vit.A deficiency blindness - Injuries 	2	<p>Moving – 1</p> <p>Seeing –2</p> <p>Speech/</p> <p>Hearing – 3</p> <p>Sensation – 4</p> <p>M.R.-5</p> <p>Behaviour-6</p> <p>Fits – 7</p>
VII.	<p>Dental problems</p> <ul style="list-style-type: none"> - Dental caries 	-	

The above chart explains the relationship of childhood diseases, which will have decreasing trend in next century. They will definitely exist in next 25 years, but the magnitude of disability due to them will be less. If the chart is analysed, it is observed that locomotor (Gr.1) & MR(5) are first & second rank of disability, which will be seen in children in 21st century on account of above-mentioned diseases. **So these diseases will add up to total quantum of disability, but their contribution will be less as compared to diseases enumerated in previous chart.**

RELATIONSHIP OF STATIC TREND DISEASES AND DISABILITY IN 21ST CENTURY

Non-communicable diseases		DISABILITY GROUP
* Rheumatic heart disease	1	Respiratory disability
* Diabetes - Mellitus		
Malignancies		
		DISABILITY GR.CODE
Childhood leukemias	4	Moving – 1
• Bone tumors	1	Seeing-2
• Other solid tumors	2,3	Speech/ Hearing – 3 Sensation – 4 M.R.-5 Behaviour-6 Fits – 7

However, there will be certain childhood diseases, which will remain static as far as their magnitude is concerned in next century, amongst them RHD, juvenile diabetes

mellitus and malignancies are commonest. The locomotor (Gr.I) disability ranks first. This will also add up to total quantum of disability in next century.

DISABILITY RANKING*

Rank – I

- (i) Gr.1 (Movement) – six, (ii) Gr.6-(Behaviour)- three, (iii) Gr.2-(Vision)-Two, (iv) Gr.3 – (Hearing and speech)- Two, (v) Gr.-5 – (learning) – Two.

Rank-II

- (i) Gr.5-(learning)-one, (iv) Gr.1-(movement)-one, (ii) Gr.6-(behaviour)-two, (ii) Gr.7-(fits)-three, (v) Gr.4-(sensory)-one,

Rank-III

- (i) Gr.6-(behaviour)-four, (ii) Gr.1-(movement)-one, (iii) Gr.2-(vision)-one,

Rank-IV

- (ii) Gr.2-(vision)-one, (i) Gr.3-(hearing & speech)-two, (iv) Gr.4-(sensory)-one, (ii) Gr.1 – (movement)-one

Rank – V

- (i) Gr.-2 (vision)-one, (ii) Gr-4 (sensory)-1, (iii) Rest Grs.-0

Rank-VI

- (i) Gr-3 (hearing & speech)-1, (ii) Gr-6 (behaviour)-1, (iii) Rest Gr.-0

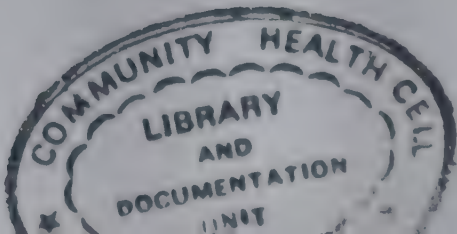
Note : Frequency ranking is done on the basis of increasing trend diseases in 21st century.

On the basis of forecasting of disability vis-à-vis the childhood diseases for 21st century, as attempted in previous paragraphs, efforts have been made to rank the disability groups of childhood also in 21st century. Only increasing trend diseases and the

disability produced by them are taken into account as they will constitute the major chunk of disability-producing diseases as far as overall prevalence is concerned. The relationship with diseases (disease-specific disability) is taken into consideration in present ranking. On that basis, it can be seen that in Rank I, where most common type of disease-specific disability is taken into account, has got disability of moving (1) as commonest, Rank-II, where second common type of disability is taken into account, has got fits (7) as commonest type of disability; Rank-III, where 3rd commonest type of disability is taken into account, has got loss of behaviour (4) as commonest disability; Rank IV, where 4th commonest type of disability is taken into account, has got visual disability (2) & speech & hearing disability (3) as commonest; Rank-V, where 5th commonest type of disability is taken into account, has again got visual disability (2) as commonest disability; Rank VI, where 6th commonest type of disability is taken into account, has got speech & hearing disability as commonest. However, rank IV and downward have got only 1 score, therefore, they cannot be taken into account. This ranking is also indicators of emerging order of disability in century in disability.

EMERGING ORDER* OF DISABILITY IN 21ST CENTURY

Group	Disability	Score as commonest disability	Other scores
1.	Disability of movement	6	(7)
2.	Strange behaviour	3	(3)
3.	Mental retardation	2	(3)
4.	Difficulty of seeing	2	(5)
5.	Difficulty of hearing & speech	2	(6)
6.	Difficulty of feeling	1	(6)
7.	Fits	0	(4)



On the basis of above ranking from 1-6 attempts have been made to predict emerging order of childhood disability in 21st century. It can be seen from above chart, that in 21st century, disability of movement (1) & disability due to strange behaviour (6) will be first & second commonest group of disability. However, ranking below III cannot be given on account of same score, but it is clear that MR(5), difficulty of seeing (2) & difficulty of hearing & speech (4) will be at number three.

- As calculated on the basis of total score as commonest type of disability.

All these children were disabled due to some of the diseases will be analyzed for their special needs, which are given below as rehabilitation need of a disabled child, duly recognized by Government of India and advocated by WHO.

REHABILITATION NEEDS OF A DISABLED CHILD

SL.

No. of Need

Function/Activity

1. Feeds himself or herself? (including eating & drinking) (over 2years)
2. Keeps himself or herself clean ? (including washing, bathing and cleaning teeth) (over 2 years)
3. Dresses and undresses ? (over 2 years)
4. Use latrine ? (over 2 years)
5. Controls urine & faeces ? (over 4 years)
6. Understands simple instructions ? (over 1 year)
7. Expresses needs ? (over 1 year)
8. Speaks ? (over 2 years)
9. Understands movements and signs for communication ? (for hearing impaired) (over 2 years)
10. Lip reads ? (For hearing impaired) (over 2 years)
11. Uses movements and signs for communication which others understand?

12. Sits ? (sitting up from lying down) (over 6 months)
13. Stands ? (including standing up from sitting) (over 1 year)
14. Walks at least ten steps ? (help means with the help of a person or using walking aids (over 1 year 6 months)
15. Moves inside the home ? Including walking, crawling, etc. using trolley, wheelchair etc. Help means with the help of a person or using walking aids. (over 1 year 6 months)
16. Moves around the village ? Including walking, crawling etc. using trolley, wheelchair etc. Help means with the help of a person or using walking aids (over 4 years)
17. Has aches and pains in the back or the joints ? (all ages)
18. Plays like other children at the same ? (Only for under 10 years)
19. Shows strange or unusual behaviour ? (over 10 years)
20. Has fits ? (all ages)
21. Goes to school ? (for children of school age)
22. Joins in family activities ? (over 2 years)
23. Joins in community activities ? (over 6 years)
24. Does household activities ? (over 6 years)
25. Has sufficient skills for income generation ? (over 6 years)
26. Has a work or has an income ? (over 15 years)
27. Protection against violence and abuse. (all ages)

These needs were, thereafter, transpolated to various type of disabilities in the emerging order of priority. Those needs, which were primarily health related needs are projected in **straight numbers**, while those needs which are secondary to health related needs (medical rehabilitation needs) are projected in *italic* in the chart below:

REHABILITATION NEEDS OF A DISABLED CHILD IN 21ST
MILLENNIUM (WHO CLASSIFICATION OF NEEDS OF A DISABLED)

Gr.No. Disability		Specific Need Number						Code of Rehab.Needs				
1.	Locomotor		1	4	13	16	22	25	1.	Feeding		
			2	5	14	17	23	26	2.	Cleaning		
			3	12	15	18	24	27	3.	Dressing		
						29			4.	Toilet Use		
									5.	Urine & Faeces control		
									6.	Understand instructions		
									7.	Express needs		
									8.	Speaks		
									9.	Know sign & body language		
									10.	Lip reading		
									11.	Uses of sign/ body language		
									12.	Sitting		
									13.	Standing		
2.	Strange Behaviour	2			18	22	25	14.	Walk 10 steps			
		3			19	23	26	15.	Move indoor			
		6	16	21	24			16.	Move comm.- unity			
								17.	Aches & pains			
3.	Mental Retardation	1	4	7	13	16	21	24	27	18.	Play normal	
		2	5	8	14	18	22	25			19.	Strange beha- viour
		3	6	12	15	19	23	26				

						20.	Fits
						21.	Schooling
						22.	Family activities
						23.	Community activities
						24.	Household activities
						25.	Income generation skill
						26	Income generation work /jobs
						27.	Human right
4.	Visual			16	21	24	27
			6	18	22	25	
			15	19	23	26	
5.	Speaking & Hearing	6	10	18	23		
		7	11	19	25		
		8		21	26		
6.	Difficulty in Faling		16	19	25		
			21	26			
			18	23	27		
7.	Fits		16	20	27		
			18	21			
			19	26			

One can see that mental retardation, which is at number three (3) in priority list, has got largest number of rehabilitation needs, while locomotor disability, which is at number (1) of priority list, has second largest number of rehabilitation needs.

This indirectly shows that ranking of disability, which has been done in this paper, **is more or less reflecting the true quantum of rehabilitation needs also**, become locomotor disability as commonest type of disability in 21st century, with 19 rehabilitation needs will definitely outweigh the total load of MR, which is 3rd common disability of 21 century with 22 rehabilitation needs. It also holds true, if we look at only medical rehabilitation needs amongst MR & locomotor disability only, as both have equal number of health related needs.

Services, which may require reorganization in 21st century fulfilling the rehabilitation needs of children

The available services provided in the country in order to fulfil these rehabilitation needs are presented in the chart below :

SERVICES PROVIDED FOR THE REHABILITATION NEEDS AT PRESENT

S.No.	Services	Delivery Channel	Responsible Deptt.
1.	Medical rehabilitation services	Government health care system	Department of Health (Centre & State)
2.	Educational rehabilitation services	Government education system	Education Department (Centre & State)
3.	Social rehabilitation services	Schemes for social justice & empowerment	Deptt. of Social Justice & Empowerment (MOSJ&E)
4.	Vocational rehabilitation services	V.R.C. scheme	Department of Labour

The present service providers are both from NGO & GO. These services are coordinated, partly or fully funded or subsidized, and monitored by MOSJ&E as the same is the nodal ministry for persons with disability w.e.f. 1981. It is true that during last 2 decades, good progress has been made in equalization of opportunities, protection of human right & empowerment of PWD. Document of National Policy for Disabled Persons & Elderly Persons, Manpower Requirement for Rehabilitation of PWD, rehabilitation of PWD, Enactment of RCI & PWD Act, Establishment of regional rehabilitation centre, Strengthening of National Institutes (6) & Artificial Limb Manufacturing Corporation (1), Declaration of National Awards for employer, employee (PWD), individual, organization of/for PWD, Establishment of linkage with international agency, Establishment of National Handicap Finance Corporation of India, National Trust for Handicaps, Vocational Rehabilitation Centres & special employment exchanges, launching scheme for IEDP (Integrated Education for Disabled Persons) are clear indications of changes brought about during last 2 decades. However, all these achievements are targeted towards empowerment through equalization of opportunities and protection of human right. While the rehabilitation needs in general are being looked after, but the progress is more towards equalization and human right protection. A little bit of health, education and employment component are also included in the annual calender of all National Institutes, which on one hand acted as disincentive for Ministry of Health & Family Welfare to develop its own plan of action, while on the other hand, is overloading the Ministry of Social Justice & Empowerment with responsibility, for which it doesn't have the infrastructure network. The net result is that the medical rehabilitation needs of PWD are not adequately addressed, bringing out more & more criticism from organized groups of /for PWD.

A critical review of possible spectrum of diseases/disorders/injuries responsible for disability in 21st century reveals so many newer challenges due to new diseases/disabilities that it becomes all the more necessary to give overwhelming priority to the medical rehabilitation needs of PWD in 21st century. When polio will be eliminated, leprosy will be cured, TB will be controlled, Vit. A deficiencies will not remain the commonest cause of blindness, the children of 21st century will be facing

health related challenges due to environmental pollution, radioactivity, resistant infection, newer infection, man made and natural disorders, emotional stress of being brought up by single parents, congenital diseases due to experimentation with natural reproduction, gene disorder due to failed gene transfer etc. Moreover 21st century will ensure a longer life span 75-80 year to average Indian; so the financial burden of caring of such children will be for longer period. The cost of medicare will also increase at least 4-5 times, hence it will be accessible to lesser & lesser persons, if not subsidized. In light of above due priority attention is required to be focused on satisfying medical rehabilitation needs of these children in 21st century “Prevention is better than cure” is true, but the causes of disability will not remain vaccine preventable disease or programme preventable conditions, therefore, it is natural that Govt. can contain the financial expenditure by fulfilling medical rehabilitation needs on priority basis through its existing health network at the earliest, so that secondary rehabilitation needs for education and employment become less and less and whatever exist that can be early met with. Therefore, there is a case to shift the focus to Health Deptt., as far as rehabilitation services for disabled children are involved. It may be worthwhile considering health ministry as nodal ministry in 21st century. Present state of performance by health deptt. in disability sector necessitates it further.

There are number of national programmes dealing with diseases, responsible for disability, but there is no focused attention given to medical rehabilitation. **The Working Group for the Welfare and Development of PWD for 9th plan** proposed Rs.2632 lakh (out of Rs. 7754.60) for prevention of disability (to be used by Health Ministry), the same has not been provided or used. The proposal of Planning Commission’s working group on **“Requirement for Supplying & Diagnostic Services” at Primary/Secondary & Tertiary Care” for 9th Plan**, had proposed per unit cost of Rs.56.50 lakh for inclusion of Medical Rehabilitation in Health care for 1 MC, 1 Dist, 1 PHC, but the same had also not been provided or used by Deptt. of Health. This is the right time when Department of Health should make use of these documents in order to fulfil its commitments for meeting out the requirements for preparing plan of action for 21st century for medical rehabilitation needs.

Capacity Building of Caring Communities with Reference to Neonatal Priorities in the Next Millennium

*** Amitava Sen**

Key Words : Neonate/Newborn, Training, Millennium, Care-giver

Definitions : These definitions have been used in relation to newborn.

Capacity building has been defined as :

- * Building ability, power or faculty to (newborn care),
- * Building power of grasping or taking in impressions, ideas or knowledge of (newborn care)
- or
- * Building mental ability to do something for (newborn care).

Caring community has been defined as:

‘Provision in the household and the community of time, attention and support to meet the physical, mental and social needs of the newborn (and growing child and other household members)’.

The caring community include every one who gives care, from mothers and family members to Traditional Birth Attendants, health workers, nurses and doctors.

Neonate/Newborn : A baby from birth to first four weeks of life.

Neonatal priorities : In relation to India as a whole and West Bengal in particular.

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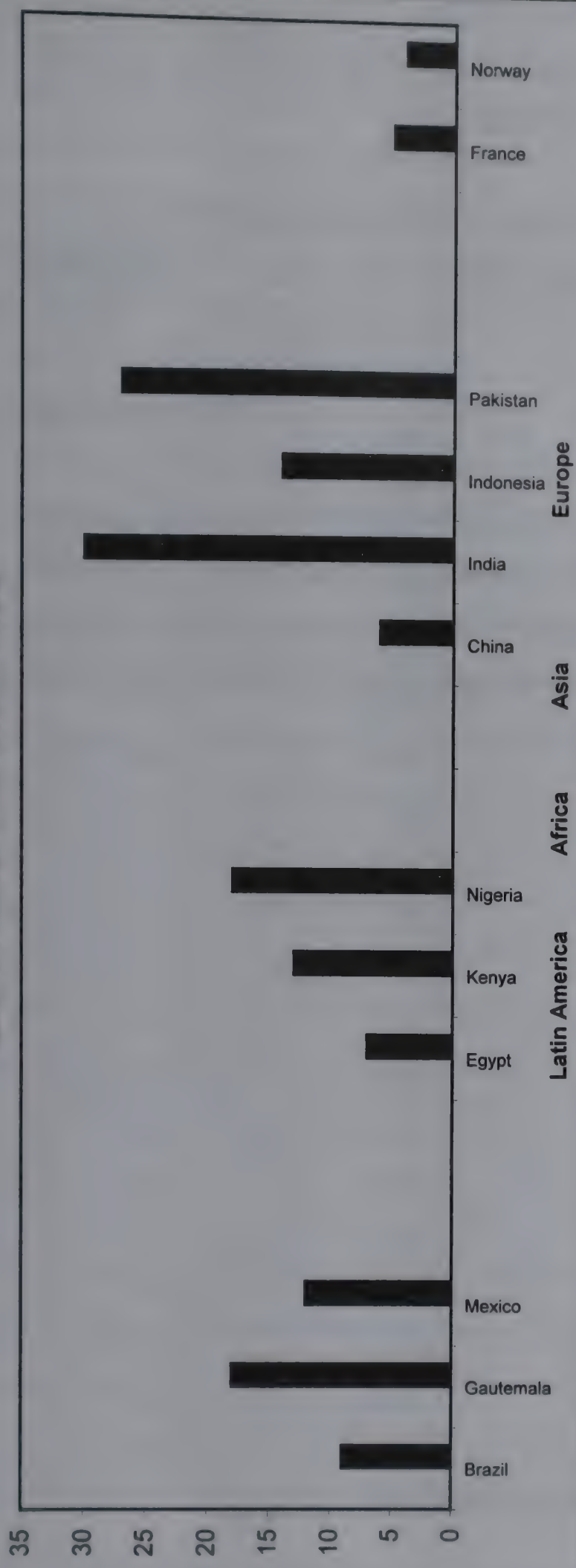
Introduction :

Neonatal period is the most vulnerable period of life. Largest number of deaths occur during this small span of 4-weeks than during any other period of life. Many of the neonates who survive a serious illness at birth or within this short but critical period, may suffer from long-term consequences with a poor quality of life. However, many of these catastrophies are avoidable and preventable with newer but simple knowledge low-cost technologies and consorted efforts by parents, family, community, health care system government or non-government and with the priorities the neonates rightly deserve.

The Situation of Newborn Survival in India:

India has made some progress in improving infant and child survival during recent years through some newer national programmes. Universal Immunization Programme (UIP), Oral Rehydration (ORT), control of acute respiratory infections (ARI) and Child Survival and Safe Motherhood (CSSM) were few of those efforts. As a result infant mortality rate (IMR) came down from 110 per thousand live births during 1981 to 74 per thousand live births in 1995 (Fig. 1).¹ :

IMR in Rural and Urban India



However, the neonatal mortality fraction of IMR has not declined in the same way. In fact, the proportion of neonatal deaths to all infant deaths has increased from 50% in 1972 to currently 66% or more (Table-1)

Table 1. Neonatal and Post-neonatal Mortality Rates India, 1972-92

Year	Neonatal mortality date (NNMR)	Post-neonatal mortality rate	NNMR/IMR
1972	71.6	68.2	51
1973	68.2	66.2	51
1974	70.1	55.3	56
1975	78.3	62.1	56
1976	77.0	52.0	60
1977	80.2	49.8	62
1978	77.4	49.6	61
1979	77.4	52.0	60
1980	75.5	48.3	61
1981	69.9	40.5	63
1982	66.7	38.1	64
1983	67.2	37.7	64
1984	65.8	38.2	63
1985	60.1	37.1	62
1986	59.8	36.6	62
1987	57.7	37.7	60
1988	56.8	37.7	60
1989	56.4	34.5	62
1990	52.5	27.2	66
1991	51.1	29.2	64
1992	50.0	29.0	63

Note : Currently NMR/IMR is going up.

Moreover it has also been observed that the IMR has almost stagnated over past several years and is no longer declining in the same rate as before 1990s. These facts clearly indicate that if the country has to make any additional achievements in infant and child survival, the issue of newborn survival must be considered and put into action with utmost priority. This may only be possible if the quality of newborn care improves in every situation where babies are born and cared. This also highlights that the inputs in newborn care have so long been grossly inadequate.

Targets for the year 2000 :

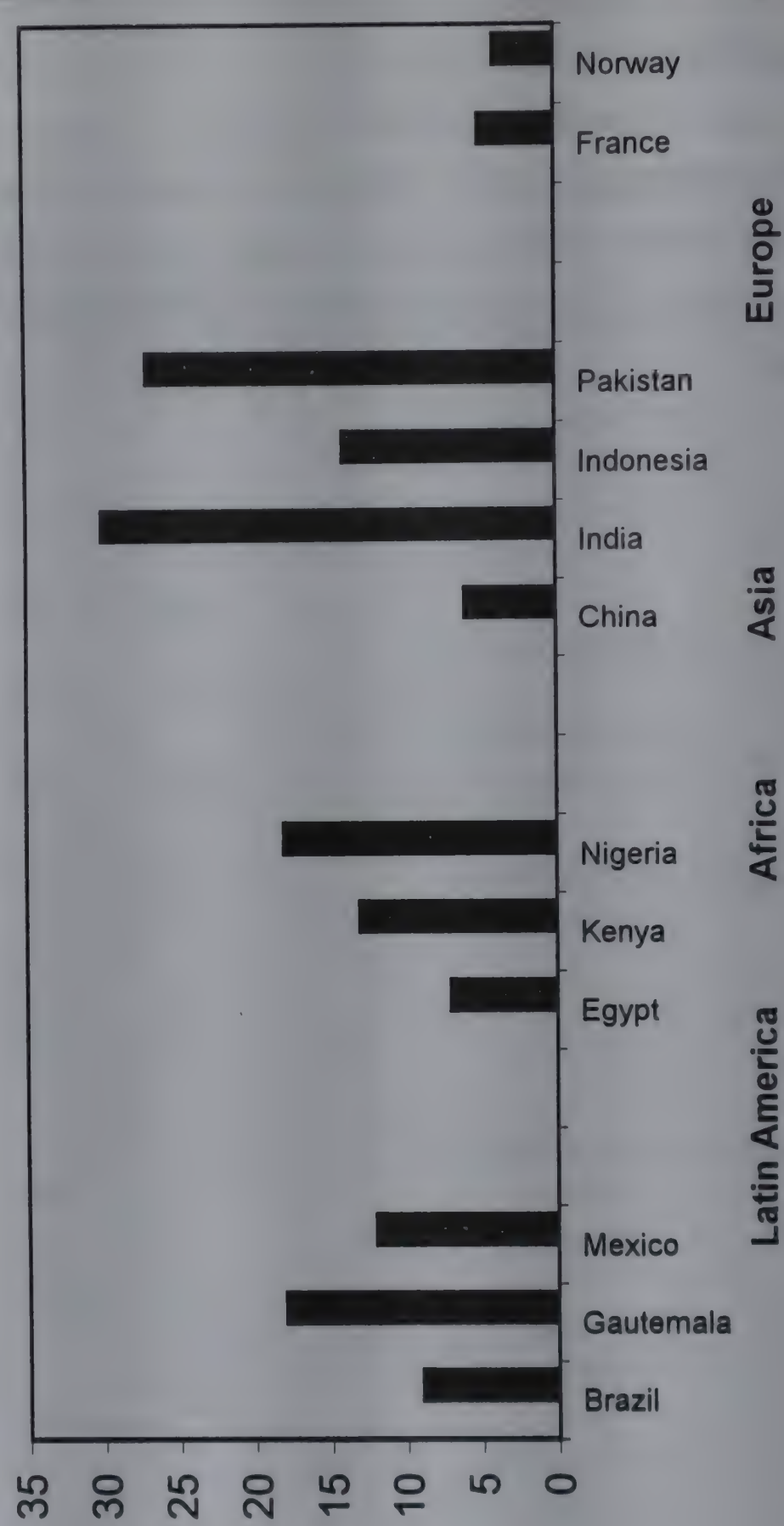
Inspite of tremendous development of health infrastructure during last 50 years after independence, the maternal and child health (MCH) goals in the 'National Health Policy' to be achieved by the magic year 2000, by and large could not be reached (Table-2)². Inspite of a large number of 'players' the 'goals' could not be scored!

Table – 2 Players and Goals

Development of Health Infrastrucure			National Health Policy MCH Goals		
			Current Level		2000 AD
Item	First 5 year Plan (1951-1956)	Eighth Five Year Plan (1992-1997)	A. REDUCTION OF MORTALITY RATES(/1000)		
Village Health Guides	Nil	415724	Neonatal Mortality Rate (1992-93)	52.7	-
Health Workers (F)	Nil	122264	Infant Mortality Rate (1995)	76	< 60
Health Workers (M)	Nil	86651	Perinatal Mortality Rate (1991)	46	< 35
ANMs	12780	150568	Under 5 Mortality Rate	115	< 70
Nurses	15550	559896	Maternal Mortality Rate (1992-93)	453	< 250
Allopathic Doctors	61840	489189	B. REDUCTION IN THE PROPOTION OF LBW (%)		
Dental Surgeons	3290	11300	Low Birth Weight Neonates (1992 – 94)	33	10
Subcentres	Nil	132730	C. SERVICES (% COVERAGE)		
Primary Health Centres	725	21854	Immunization		
Community Health Centres	Nil	2424	- Infants (1992-93)	35.4	85
Dispensaries	5306	28321	- Pregnant Women (1992-95)	79	100
Hospitals	2694	13692	Deliveries by trained personnel (1990-96)	34	100
Total Hospital Beds	117178	596203	Antenatal Care (1992-93)	62	100
Admissions in Medical College	1400	17000	Neonatal Tetanus/1000 live births (1995)	2	0*
Source : Government of India			* Elimination by 1995		
			Source : Various sources		

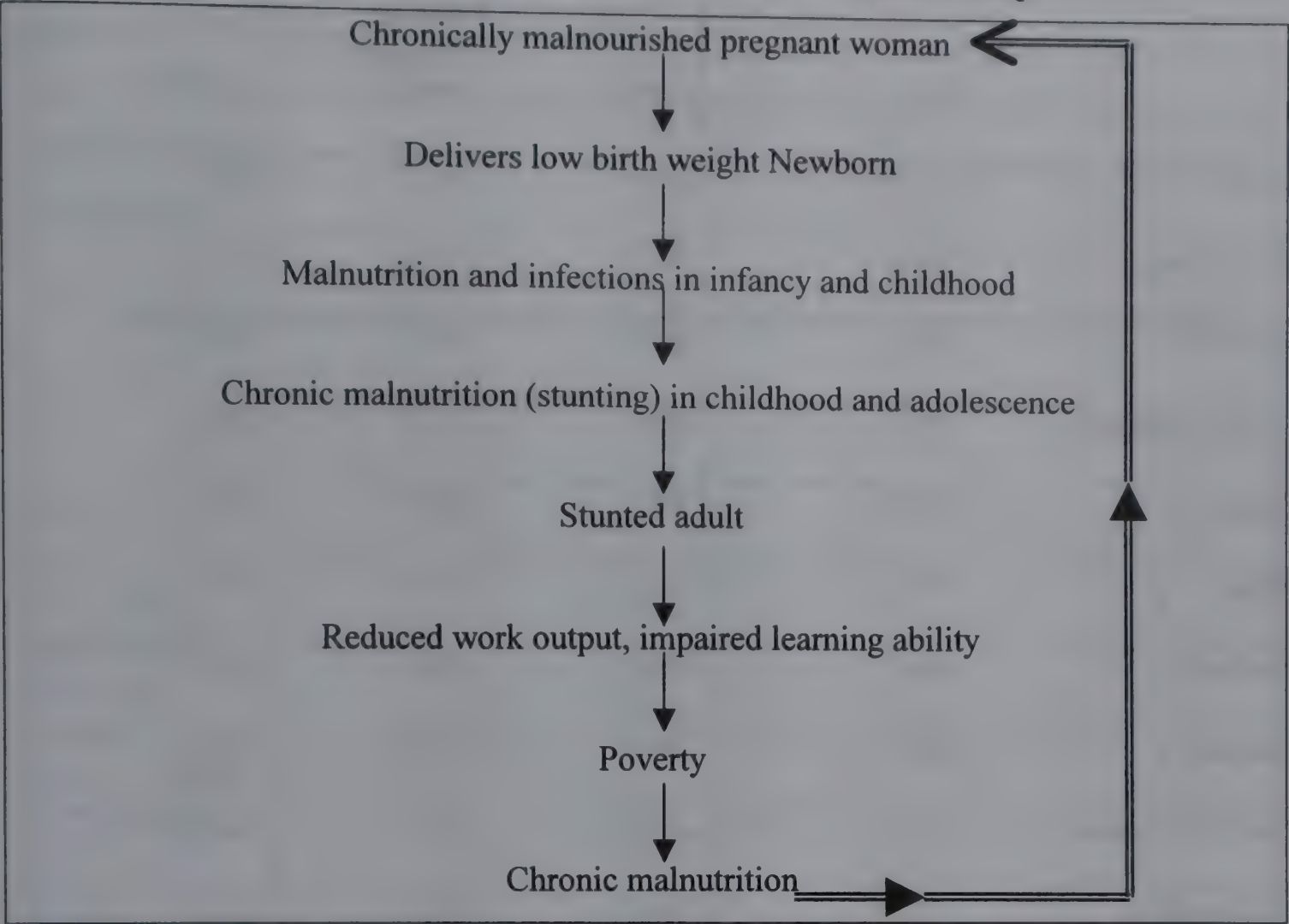
The target set for IMR is now a distant dream except in a couple of exceptional States. Surprisingly enough no such target was set for NMR. The target for perinatal mortality (PMR), set at 35 per thousand births is too far as of today. Even the target for elimination of neonatal tetanus (NNT) by the year 1995 could not be achieved at the end of 1999! Low birth weight (LBW) remained at a high level of above 30%, one of the highest in the world (Fig. 2)³. Today largest number of LBW babies are born in India – a distinction indeed!

Prevalence of Low Birth Weight in Selected Countries



The late consequences of LBW in adult life is well known today (Fig.3)^{3,4}

Fig.3. Mother, Child Environment Interrelationship



The data on the four parameters relevant to newborn care, directly or indirectly e.g. exclusive breastfeeding, iron-folic acid supplementation and two doses of tetanus toxoid during pregnancy and institutional delivery, reflect poor achievement of these ‘Health for all by 2000’ targets achievable through national programmes at State level (except a couple of States) and at national level (Table – 3)⁵.

Table – 3 State-wise Data on Newborn-Relevant Parameters

State	Exclusive Breastfeeding (*)	Iron-Folic Acid during Pregnancy (**)	2 doses Tetanus Toxoid during Pregnancy (***)	Institutional Delivery (****)
India	51.0	50.5	61.1	25.6
West Bengal	40.0	56.3	77.7	31.5
Kerala	59.2	91.0	94.1	88.4
Andhra Pradesh	70.5	76.1	81.2	33.0
Assam	65.0	39.5	43.9	11.1
Bihar	51.5	21.4	37.0	12.1
Gujarat	36.3	69.3	69.9	35.7
Karnataka	65.6	74.8	76.5	37.6
Madhya Pradesh	31.4	44.2	51.3	16.0
Maharashtra	37.1	70.6	81.6	44.1
Orissa	45.7	49.9	63.0	14.2
Rajasthan	65.9	29.3	34.7	11.6
Tamil Nadu	55.8	84.0	93.6	63.6
Uttar Pradesh	60.3	29.6	44.3	11.3

(*) : % 0-3 month old infants who are exclusively breastfed

(**) : % mothers (who gave birth in the past four years) receiving iron-folic Acid tablets

(***) : % mothers (who gave birth in the past four years) receiving tetanus toxoid

(****) : % mothers (who gave birth in the past four years) delivering in public or private institution.

The available information on the place of delivery and attendant at the time of delivery in India as a whole reveal that 66% of all deliveries are taking place at home under supervision of Traditional Birth Attendants (TBAs), family members and even neighbours (Table 4)⁵ away from any health facility and beyond the reach of any trained person. This is true for all major States except Kerala and to some extent Tamil Nadu. It is not at all surprising that many of these babies do not survive beyond the critical neonatal period.

Table 4: Place of Delivery and Attendant at Birth in Major States in India

	Institutional			Home			
	Total	Govt.	Private	Total	Qualified	TBA	Other
India	25.6	15.7	10.9	74.4	9.1	35.1	30.2
Kerala	88.4	39.0	49.5	11.6	1.8	8.3	1.4
Tamil Nadu	63.6	33.7	29.9	36.4	8.4	21.2	6.8
Maharashtra	44.1	22.8	21.4	55.9	9.8	19.9	26.1
Karnataka	37.6	21.7	15.9	62.4	13.8	21.8	26.8
Gujarat	35.7	15.2	20.4	64.3	7.5	44.9	11.9
Andhra Pradesh	33.0	13.7	19.2	67.0	17.2	33.8	16.1
West Bengal	31.5	26.3	5.3	68.5	2.3	36.2	30.0
Punjab	24.8	9.8	15.0	75.2	23.6	49.6	2.1
Haryana	16.7	9.2	7.5	83.3	13.9	66.2	3.1
Madhya Pradesh	16.0	12.0	4.0	84.0	14.5	29.8	39.7
Orissa	14.2	12.1	2.1	85.8	6.9	37.3	41.7
Bihar	12.1	5.8	6.3	87.9	7.1	58.2	22.6
Rajasthan	11.6	9.5	2.0	88.4	10.7	40.5	37.2
Uttar Pradesh	11.3	7.0	4.3	88.7	6.2	33.3	49.1

Source : NFHS (1992-93)

The urban rural differences in perinatal mortality rate (PMR), neonatal mortality rate (NMR) as well as infant (IMR) and under-5 Mortality Rates (U-5 MR) remained remarkable, the rural rates being almost double the urban rates (Table – 5)⁵. The data presented in the Tables 4 and 5 not only indicate poor quantity of services in relation to newborn care but also poor quality of the same in India as a whole and in most of the Indian States. Thus it is no surprise that none of the targets in relation to newborn care, direct or indirect, could be achieved by the year 2000 AD.

Table – 5

A. Components of Under-5 Mortality, 1993-India and its States (Rural)

States	PNMR	SBR	NMR	IMR	U5MR
India	47.9	10.8	52.3	82	119
Orissa	69.1	14.7	81	115	162.8
Madhya Pradesh	55.4	8.1	68.1	113	166.1
Uttar Pradesh	50.1	9.8	59.7	98	144.8
Assam	36.9	17.5	24.2	84	128.9
Bihar	38.4	6.3	46.6	73	124.5
Rajasthan	52.5	7.3	57.7	88	120.8
Haryana	41.2	15.5	37.8	70	74.9
Karnataka	71.7	26	58.4	79	100.3
Gujarat	37.8	4.3	43.6	65	92.8
West Bengal	43.9	15.3	42.5	64	88.9
Andhra Pradesh	47	11.6	47.4	70	88.8
Himachal Pradesh	33	10.1	38.4	65	78
Tamil Nadu	55.1	9.9	54.9	66	85.2
Punjab	39.7	18.1	34.8	60	79
Maharashtra	45.3	11.1	48.1	63	87.6
Kerala	17.9	7.8	10.8	15	20.2

B. Components of Under-5 Mortality, 1993-India and its States (Urban)

States	PNMR	SBR	NMR	IMR	U5MR
India	31.4	9.3	28.9	45	59.4
Orissa	40.3	5.5	54	69	85.7
Madhya Pradesh	39.8	6.2	45.7	67	86.8
Uttar Pradesh	41.8	6.9	43.3	66	89.1
Assam	45.1	15.4	45.3	60	63.3
Bihar	28	13.8	20.6	41	59.3
Rajasthan	21.3	2.5	23.4	54	63.3
Haryana	28.5	9.8	24.8	53	69.9
Karnataka	45.6	19.7	32.6	42	60.5
Gujarat	31.8	4.4	33.2	43	57.7
West Bengal	25.3	11.8	20.1	33	39.1
Andhra Pradesh	40.6	13.8	32.4	46	55.2
Himachal Pradesh	29.9	9.7	24.4	36	42.2
Tamil Nadu	33.3	11.5	27.9	38	45.3
Punjab	21.2	5.2	21.7	39	46.3
Maharashtra	19.3	8	16.1	32	44.9
Kerala	13.5	9.2	7.4	8	13.9

Future Targets:

Following the targets set for ‘Health for All by the year 2000 AD’, WHO has set new ‘Global Targets to 2020’⁶. However, once again no target has been set for reduction of neonatal mortality (NMR), directly or indirectly. It appears more realistic to make efforts to achieve the unreached targets set for the year 2000. At this point it seems more sensible to review the situation of unreached target, particualry in relation to the unreached targets every 5 years or so and reset future targets accordingly. Otherwise setting fixed targets every 20 years or so would be like a comet which comes and passes away at fixed intervals without serving any useful purpose.

How do the neonates Die?

A. Indian Scene:

The information on the causes of deaths of the newborn (Table-6)⁷ does not appear to reflect the actual situation as it does not include birth asphyxia and sepsis. Prematurity per se is also not accepted as a direct cause of death (except extreme prematurity or immaturity)

Table 6. Percentage distribution of deaths under causes peculiar to Infancy (All India, 1993)

S. No	Specific cause group	Percentage
1	Prematurity	46.4
2.	Respiratory Infection of Newborn	14.4
3.	Diarrhoea of Newborn	8.0
4.	Congenital Malformation	4.6
5.	Cord Infection including Tetanus	4.5
6.	Birth Injury	3.0
7.	Not Classifiable	19.1

The National Neonatal – Perinatal Database (NNPD), 1995⁸ analysing more than 37000 births and 1400 neonatal deaths from 16 large hospitals from all over India, identified the primary causes of neonatal mortality in hospital set up which could be grouped under five major causes of neonatal mortality such as,

1.	Immaturity (birth weight below 1000 gms)	31%
2.	Hypoxia	26%
3.	Infection	22%
4.	Malformation	10%
5.	Others	12%

Information on the perinatal and neonatal mortality rates from the same document⁸ revealed similar trends as from other sources (Table – 7)

Table 7. Perinatal and Neonatal Mortality Rates, NNPD, 1995

1.	Perinatal mortality rate	:	71.6 per 1000 births
2.	Stillbirth rate	:	39.1 per 1000 births
3.	Neonatal mortality rate	:	37.7 per 1000 live births
4.	Early neonatal mortality rate (First week deaths)	:	33.8 per 1000 live births

In this study the early neonatal mortality rate (first week deaths) was extremely high and constituted about 90% of total neonatal mortality in the database.

The implication of this information has been highlighted in the subsequent discussion.

B. West Bengal:

The information on India as a whole to a large extent is true for West Bengal as well.

Estimates based on 1991 Sample Registration System (SRS) data reveal a gloomy picture in relation to the newborn in the State (Table – 8)⁹:

**Table 8. Estimates per 1,00,000 population in West Bengal
(Based on SRS data)**

S. No.	Parameters	Estimates (Numbers)		
		Urban	Rural	Combined
1.	Live births	1640	2800	2480
2.	Low birth weights	574	980	868
3.	Moderate to severe birth asphyxia	49	84	74
4.	Neonatal deaths	41	134	108
5.	Infant deaths	77	213	176
6.	Child deaths	NA	NA	246

Even with the expected minimal reduction of NMR with time, with a current population of around 8 crores in West Bengal alone, about 86000 neonates are dying every year. An enormous number of loss of human life for a State alone indeed!

C. Developing Countries:

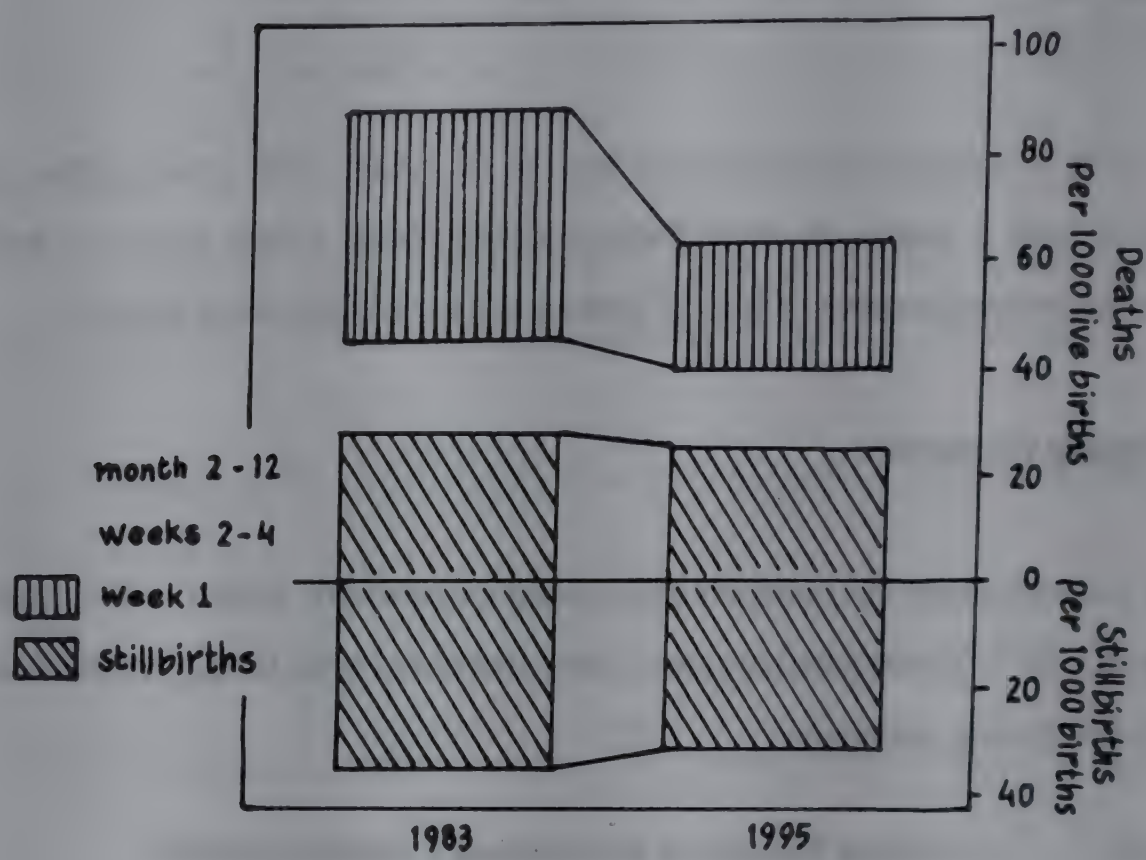
WHO has estimated the numbers and causes of newborn deaths in the developing countries (Table – 9)¹⁰. These numbers must have increased with time. Newborn survival is no better in developing countries.

Table 9. Newborn Deaths in Developing Countries (1993)

S. No.	Cause of Death	Number of Newborn Deaths	Proportion of all Newborn Deaths (%)
1.	Birth Asphyxia	840 000	21.1
2.	Birth Injuries	420 000	10.6
3.	Neonatal Tetanus	560 000	14.1
4.	Sepsis	290 000	7.2
5.	Pneumonia	755 000	19.0
6.	Diarrhoea	60 000	1.5
7.	Prematurity	410 000	10.3
8.	Congenital Anomalies	440 000	11.1
9.	Others	205 000	5.1
	Total	3 980 000	100.0

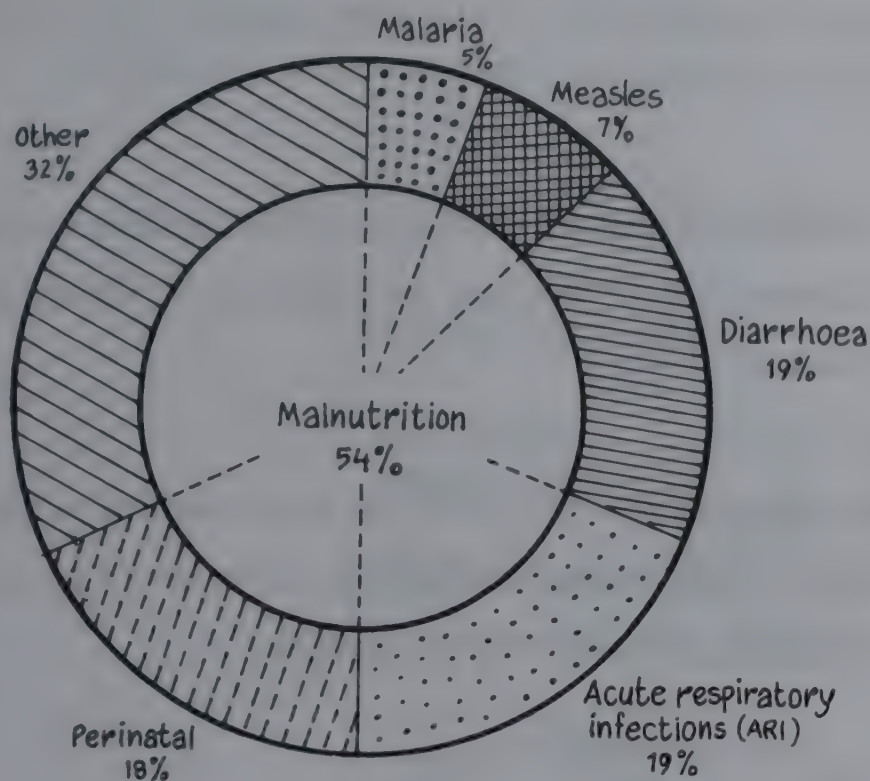
The WHO and World Bank data¹¹ published during World Health Day, 1998 show stillbirths and neonatal deaths during first week of life remain high and almost unchanged between 1983 and 1995 (fig.4)

**Stillbirths and deaths
in the first week of life remain
high in developing countries**



It has already been pointed out that the first week deaths constitute the largest fraction of NMR (Table – 7). In 1995, WHO has shown that nearly one-fifth, 18% to be precise, of 11.6 million deaths among children less than 5 years old in all developing countries are due to perinatal (stillbirths plus-first week deaths) causes (fig.5)¹².

Distribution of 11.6 million deaths among children less than 5 years old in all developing countries, 1995



Approximately 70% of all childhood deaths are associated with one or more of these 5 conditions

Why the neonates are dying?

Although Government of India through a 'Task Force' has published guidelines for 'Minimal Perinatal Care' in 1982¹³, no follow up action on its implementation has been taken up till recent years. In a workshop in 1990¹⁴, National Neonatology Forum, India identified the reasons of alarmingly poor neonatal care in the country as:

- i. Absence of National Policy on Neonatal – Perinatal Care
- ii. Unsatisfactory training in newborn care
- iii. Lack of accountability in newborn care
- iv. Poor management of health care
- v. Imbalance in resource utilization
- vi. Lack of neonatal beds in health facilities.
- vii. Lack of transportation and referral services
- viii. Poor record maintenance
- ix. Lack of coordination

However, the workshop recommendations¹⁴ were not implemented by the Government at that time. This negative attitude towards newborn has rightly been termed ‘Neglect’¹⁵.

On paper atleast the children under one year of age are among the ‘Target group’ covered by the ICDS services. But it is an open secret that the neonates are not taken care of by the ICDS functionaries.

Only during 1994, the Child Survival Safe Motherhood (CSSM) module included some information on ‘Essential Newborn Care’¹⁶. This was not backed up by the minimal facilities for newborn care at PHC level.

In the curriculum for under-graduate students so far the component of newborn care has been too inadequate to equip a fresh medical graduate to take care of a newborn independently. This has led to ‘**The Cycle of Death**’ (Fig. 6)¹⁷ as follows:

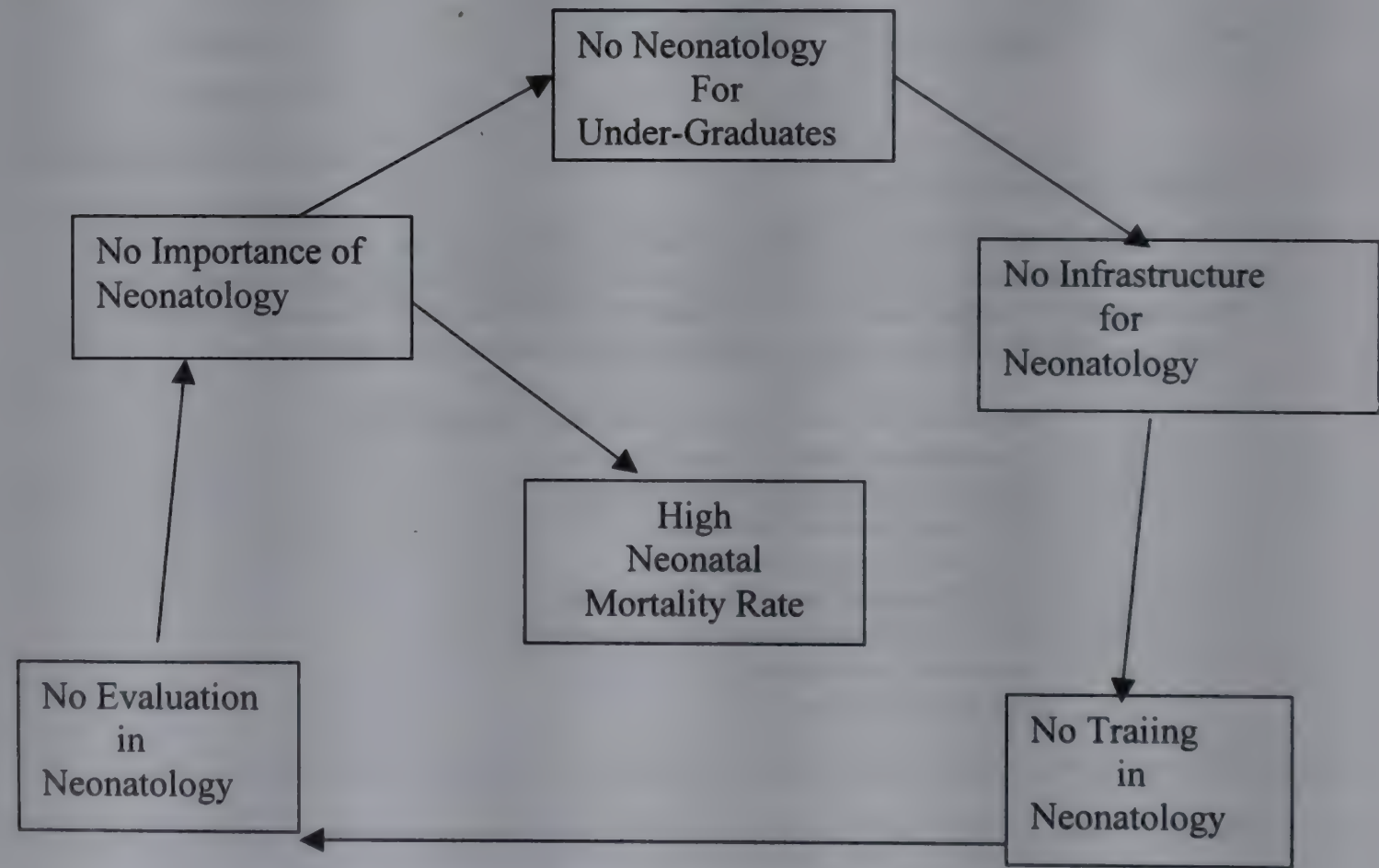


Fig.5 The Cycle of Death : The Situation so far

National Neonatology Forum. India has proposed need-oriented changes in curriculum based on task-analysis (Fig.7) and competencies (Fig.8) during undergraduate medical training¹⁸ , but that is not yet a reality. The reason behind this need-oriented curricular changes is the fact that the fresh graduates usually deliver health care in the rural areas where most of the neonates are born and die.

Periodic re-orientations are also essential to break **The cycle of death'**

Fig. 7 . Task Analysis

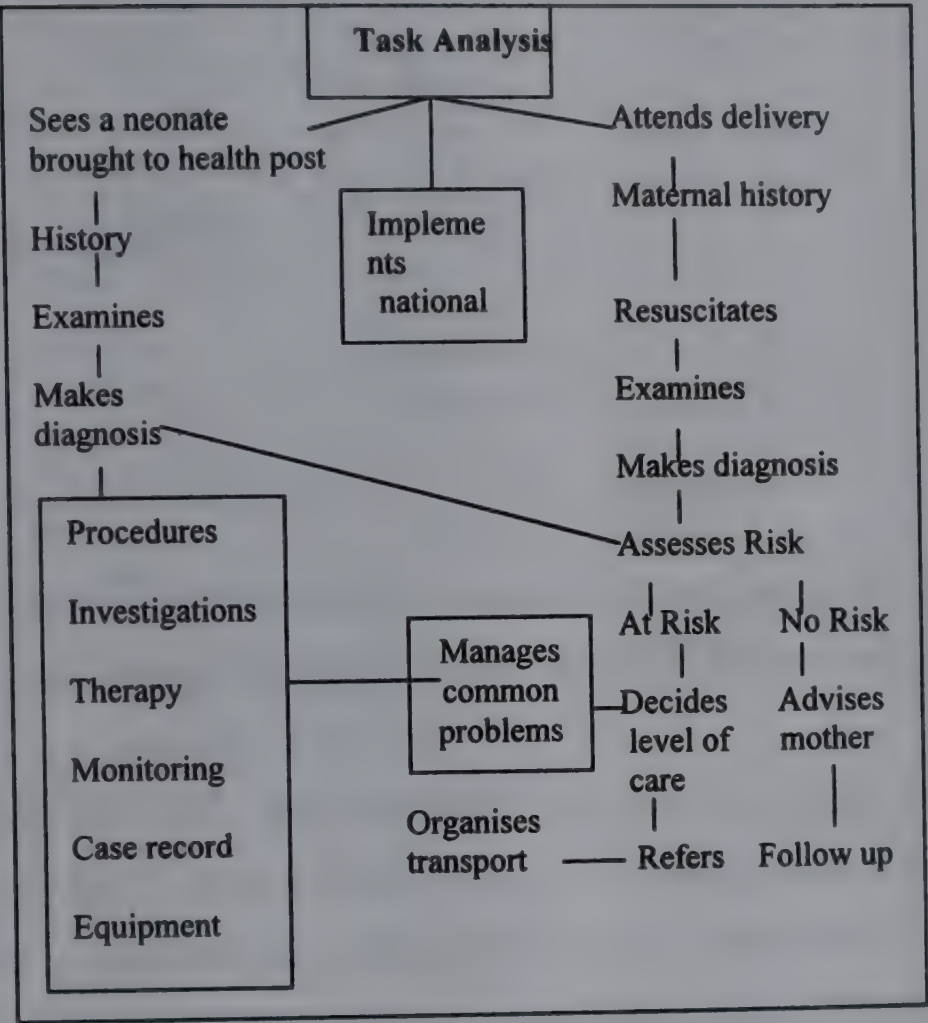
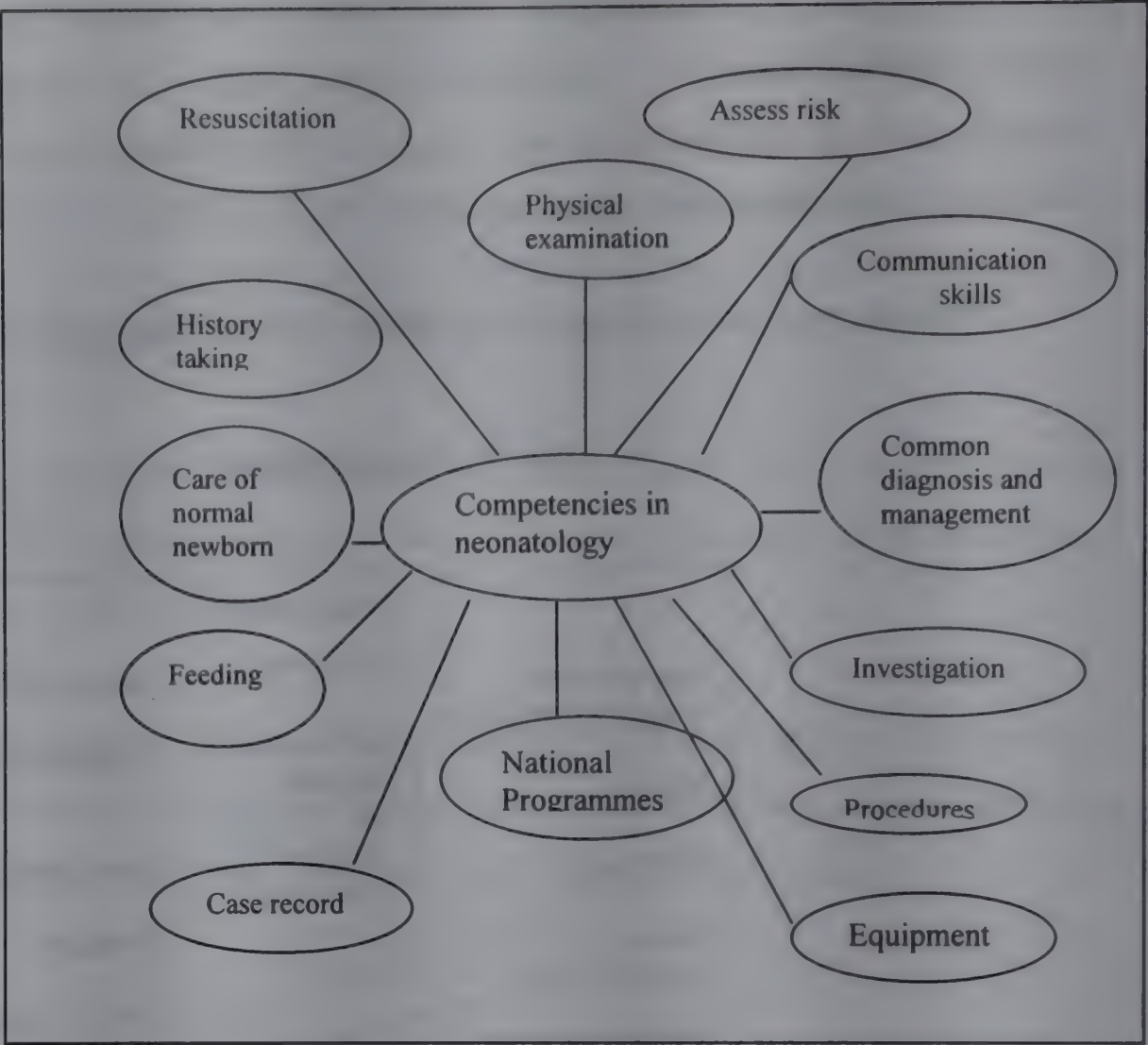


Fig.8. Competencies in Neonatology



In the international scene, the first edition of the most widely circulated **Facts for Life**¹⁹ did not contain the much-needed chapter on newborn care.

Even in the very recently developed WHO – UNICEF ‘Integrated Management of Childhood illnesses (IMCI)’, the very vital first week of life has not been taken care of (Fig.9)²⁰. It has already been emphasized that the first week of life need to be considered one of the periods with utmost priority under any circumstances.

Fig. 9 INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESS (IMCI)

SICK CHILD

AGE 2 MONTHS UP TO 5 YEARS

ASSESS AND CLASSIFY THE SICK CHILD

Assess, Classify and Identify Treatment

Check for General Danger Signs Then Ask About Main Symptoms 2

Does the Child have cough 2
Does the child have diarrhoea 3
Does the Child have fever
Classify malaria 4
Classify measles 4
Does the child have an ear problem 5

Then Check the Child for Malnutrition and Anaemia 6
Then Check the Child's Immunization Status 6
Assess Other Problems 6

TREAT THE CHILD

Teach the Mother to Give Oral Drugs at Home

Oral Antibiotic 7
Oral Antimalaria 8
Paracetamol 8
Vitamin A 8
Iron 8
Mebendazole 8

Teach the Mother to Treat Local Infections at Home

Oral Antibiotic 7
Oral Antimalarial 8
Paracetamol 8
Vitamin A 8
Iron 8
Mebendazole 8

Teach the Mother to Treat Local Infections at Home

Treat Eye Infection with Tetracycline Eye Ointment 9
Dry Ear by Wicking 9
Treat Mouth Ulcers with Gentian Violet 9

Soothe the Throat Remove the Cough with a Safe Remedy 9

Give These Treatments in clinic Only

Intramuscular Antibiotic 10
Quinine for Severe Malaria 10
Prevent Low Blood Sugar 11

TREAT THE CHILD Continued

Give Extra Fluid for Diarrhoea and Continue Feeding

Plan A Treat Diarrhoea at Home 12
Plan B Treat Some Dehydration with ORS 12
Plan C Treat Severe Dehydration Quickly 13

Immunize Every Sick child, As Needed 13

Give Follow-up Care

Pneumonia 14
Persistent Diarrhoea 14
Dysentery 14
Malaria (Low or High Malaria Risk) 15
Fever - Malaria Unlikely (Low Malaria Risk) 15
Measles with Eye or Mouth Complications 15
Ear Infection 16
Feeding Problem 16
Pallor 16
Very Low Weight 16

COUNSEL THE MOTHER

Food

Assess the child's Feeding 17
Feeding Recommendations 18
Counsel About Feeding Problems 19

Fluid

Increase Fluid During Illness 20

When to Return

Advise the Mother When to Return to Health Worker 20

Counsel the Mother About Her Own Health

21

SICK YOUNG INFANT AGE/WEEK UP TO 2 MONTHS

ASSESS, CLASSIFY AND TREAT THE SICK YOUNG INFANTS

Assess, Classify and Identify: Treatment

Check for Possible Bacterial Infection 22
Then ask Does the Young infant have diarrhoea 23
Then Check for Feeding Problem or Low Weight 24
Then Check the Young Infant's Immunization Status 25
Assess Other Problem 25

Treat the Young Infant and Counsel the Mother

Oral Antibiotic 26
Intramuscular Antibiotics 26
To treat Diarrhoea See *TREAT THE CHILD Chart* 12-13
Immunize Every Sick Young Infant 127
Correct Positioning and Attachment for Breastfeeding 28
Home Care for Young Infant 28

Give Follow-up Care for the Sick Young Infant

Local Bacterial Infection 29
Dysentery 29
Feeding Problem 30
Low Weight 30
Thrush 30

RECORDING FORMS SICK YOUNG INFANT SICK CHILD WEIGHT FOR AGE CHART

31
33
on back cover

Source:

WHO and UNICEF

What has been Achieved :

During early 1960s, in the village Imesi in Nigeria, Margaret Woodland, a nurse from United Kingdom (U.K.) with training in midwifery and community work, leading a team of five local nurses and supported by a hospital 25 miles away, could reduce NMR from 78 in 1957 to 22 during 1962-66. NMR in U.K. in 1966 was 12.9²¹. She showed the world how 'Health for All Newborn by Primary Care' could be achieved in such a short time and almost without any resources.

Almost similar examples are also available from different projects in India.

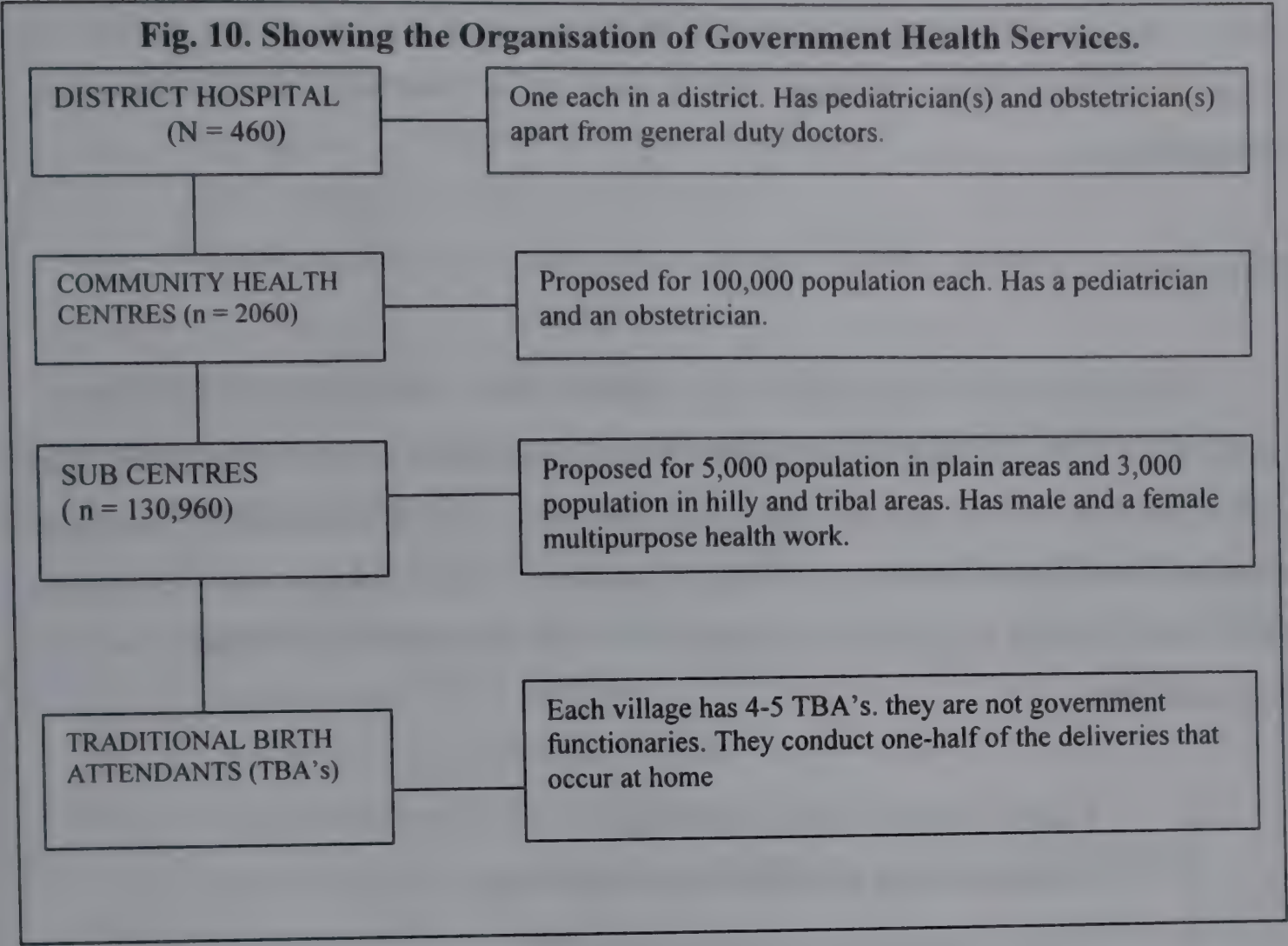
The recent study done by the Society for Education, Action and Research in Community Health (SEARCH) at Gadchiroli in a remote area of Maharashtra showed that NMR could be reduced by 56% by providing primary care to; the neonates by trained health workers in an area covering 39 villages ²². IAP, NNF and UNICEF in a recent workshop at Sodha-gram in Gadchiroli reviewed all the components of SEARCH model in details and concluded that most of the components can be taken to scale in the primary health care systems immediately to bring down the NMR in the country and thereby reduce the IMR and child mortality rate as well²³.

However, there is no reflection of such excellence in the country as a whole except in the State of Kerala.

What can be Achieved:

Reach the Newborns where they are¹:

Today India has an enormous Government health infrastructure (Fig. 10)²⁵



Even then the fate of the neonates delivered at home remain virtually unchanged. The existing situation of newborn care at home needs to be critically reviewed in order to identify the interventions which can be undertaken by TBAs and/or other attendants at birth and afterwards. In India 75% of deliveries take place at home and half of them are attended by family members or neighbours without even presence of a TBA.

While preparing the strategy for improvement of newborn care, the attendants present at the time of delivery and afterwards are to be kept in mind. The strategies need to be State-specific as the situation varies significantly from State to State (Tables 3,4)

Deliveries conducted in the private institutions are about two-thirds (Table-4) of those conducted in the government institution when India as a whole is considered. Because of the variation from State to State a strategy for improving newborn care in the private sector also needs to be included in the plan for improving newborn care everywhere the newborn is born. At the same time the caregivers should be informed in simple language as to when and where any newborn in need is to be referred and how to transport the baby there. All these efforts need to be sustained and simultaneously strengthened.

What Next?

As most of the babies are born at home where deliveries are conducted by untrained persons including family members and neighbours in many instances. The babies thus born, mostly remain under their care also. Thus it is necessary to develop strategies for different situations and also to establish referral linkages with institutions which have facilities to provide necessary care for the sick neonates. Newborn care can be divided into:

- i. Care at home by mother and family
- ii. Care at home or sub-centre by health workers
- iii. Care by nurse and medical officer at PHC
- iv. Care at referral institutions

Appropriate strategies and protocols are necessary for each situation. One of the simplest strategies offered to increase public awareness on newborn care is communication strategy, like:

To convert the science of neonatology to the art of newborn care and to spread those messages widely’.

The communication strategies propagated by National Neonatology Forum in the form of a poster (1992)¹⁵ to increase public awareness include four steps:

- i. Care during pregnancy
- ii. Safe delivery at hospitals or by trained midwives
- iii. Breastfeeding for complete nourishment
- iv. Health check-ups to guard against low birth weight and sickness.

UNICEF-WHO-UNESCO are currently promoting five prime messages on newborn care at home by mothers, family members and grassroots level health workers. These five prime messages are ²⁶:

- i. Keep the baby warm
- ii. Protect the baby from infection
- iii. Exclusive, on demand, breastfeeding
- iv. Assist if the baby is not breathing
- v. Recognise signs that require an immediate visit to the nearest hospital

These prime messages are to be propagated through the length and breadth of the country so as to reach everyone who takes cares of newborn even in the remotest corner of the country. The propagation of messages must be complemented by sustained and simultaneous action. Then and then only the science of neonatology would be converted into the art of newborn care at every household.

At a national-level workshop at Ahmedabad (1997), National Neonatology Forum with WHO and Government of India developed the management protocols for newborn care by TBAs and female health workers at home as well as by the medical officers at PHCs and FRUs²⁷. A lot of work has already been done by NNF on the skill

development and appropriate equipments at PHCs, FRUs and district hospitals. All these are being incorporated in the newborn care component of the new Reproductive and Child Health (RCH) Programme. All these inputs, hopefully, will expedite the progress towards achieving the missed targets of 'Health for All by 2000 AD', ten to twenty years after the year 2000.

The West Bengal Initiative :

During 1994-95, the BPHCs, FRUs and the district hospitals of two less developed districts of West Bengal, South 24 Paraganas and North Dinajpur were operationalised for newborn care as a pilot programme under CSSM programme. Basic equipments for newborn care were supplied and NNF trained the medical officers of South 24 Paraganas district. However, the evaluation survey on equipment use conducted by NNF, West Bengal in February, 1998 revealed a sad story. The report²⁸ demonstrated that the operationalization programme was not successful in West Bengal.

Following this, NNF, West Bengal took initiative to improve training in newborn care in the State. In collaboration with the WHO Collaborative Centre for Training and Research in Newborn Care, AIIMS, New Delhi and Prof. Suvarna Devi from Berhampur, Orissa, two 4-day training of trainers (NBC-TOP-TOT) were organized. (The 4-member training team had similar training in Orissa earlier). These programmes were funded by UNICEF. About 42 State-level trainers were trained for taking up the training programme through out the State. The teams of trainers conducted few pilot training programmes each for TBAs, Nurses and medical officers including specialists in different districts with consent from the State Government and funding from UNICEF. An illustrated booklet in Bengali²⁹ was developed for TBA training and the 2-volume training module published by the WHO Collaborating Centre³³ were used for training nurses and medical officers.

Satisfied with the report³⁰ of the pilot programmes, UNICEF, Calcutta³¹ signed an agreement with NNF, West Bengal with consent from the State Government. Under this

agreement a section of TBAs, nurses and medical officers working in the government health set up in 16 of the 18 districts in the State would be trained in essential newborn care by the trainers from NNF, West Bengal with UNICEF funding with the single objective to reduce neonatal morbidity and mortality in the State within 4-5 years. So far two districts, Bardhaman and Murshidabad have been completed. It has already been observed that different health functionaries took initiative in different areas to establish much-needed newborn corners with local resources³². Is it not an evaluation by its own merit?


Conclusion :


Though the targets, particularly in relation to the newborn, direct or indirect, for 'Health for All by the year 2000 AD' seems distant even at the end of the year 1999, some progresses are on the way. The next 5 to 10 years would be the most crucial period towards achieving those targets in relation to newborn care in India. No new targets should be set unless the targets for 2000 are achieved even may be by the year 2020 AD. There are enormous tasks ahead to reduce NMR (Fig. 12):


- i. Spread correct information on newborn care
- ii. More and more training on newborn care
- iii. Patient status to the neonates in every health facility
- iv. Establish newborn corners in every health facility
- v. Establishment of referral link and transportation


Fig.11 The West Bengal Initiative


WEST BENGAL

 OPERATIONALIZATION
TRAINING PROGRAMMES
SEPTEMBER, 1994

 OPERATIONALIZATION
EVALUATION
FEBRUARY, 1998

 NBC TOP TOTS
JULY & NOVEMBER,
1998

 PILOT TRAINING
PROGRAMMES,
SEPTEMBER 1998 TO
FEBRUARY 1999

 DISTRICT TRAINING
PROGRAMMES
APRIL 1999 ONWARDS

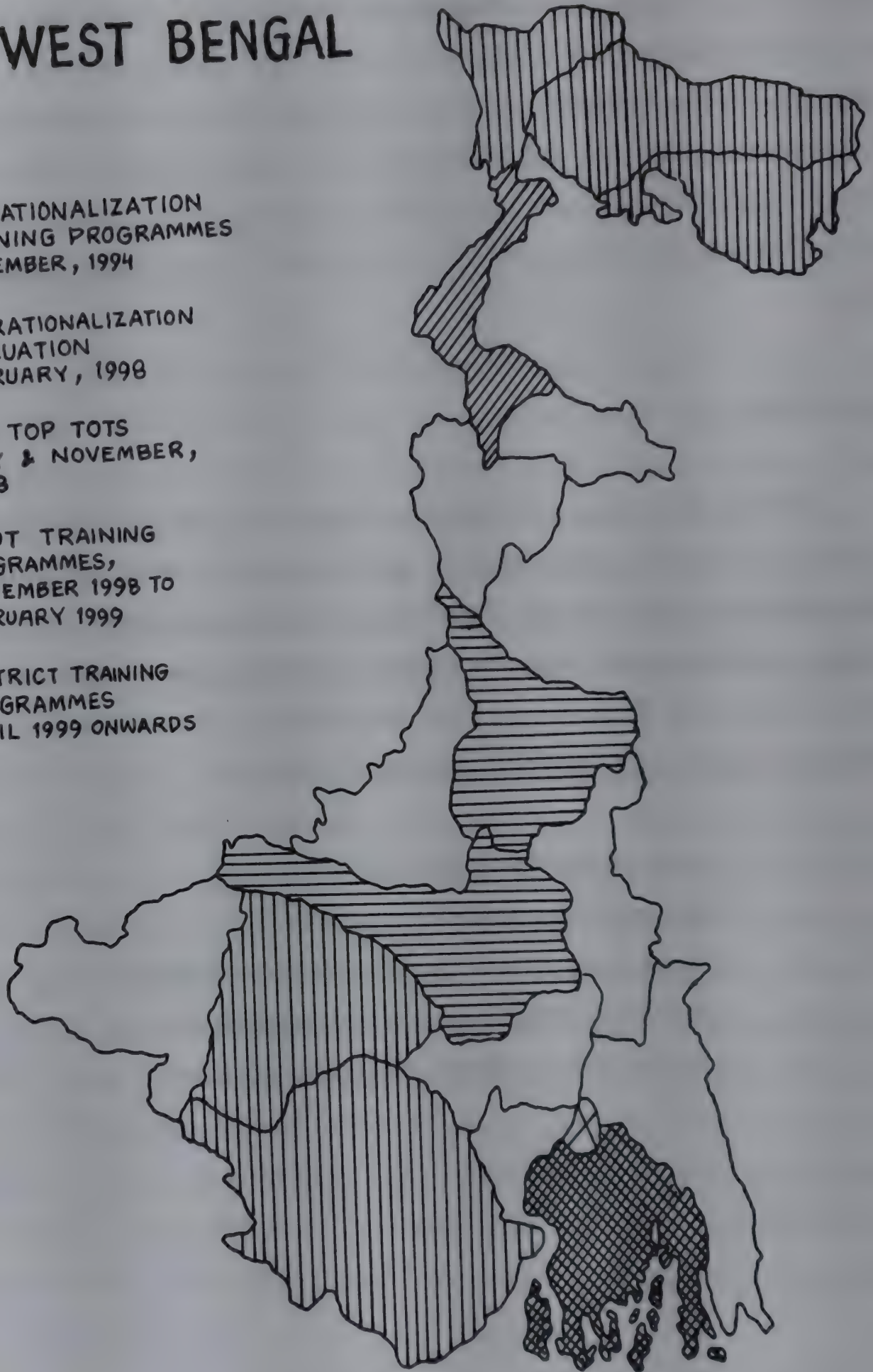
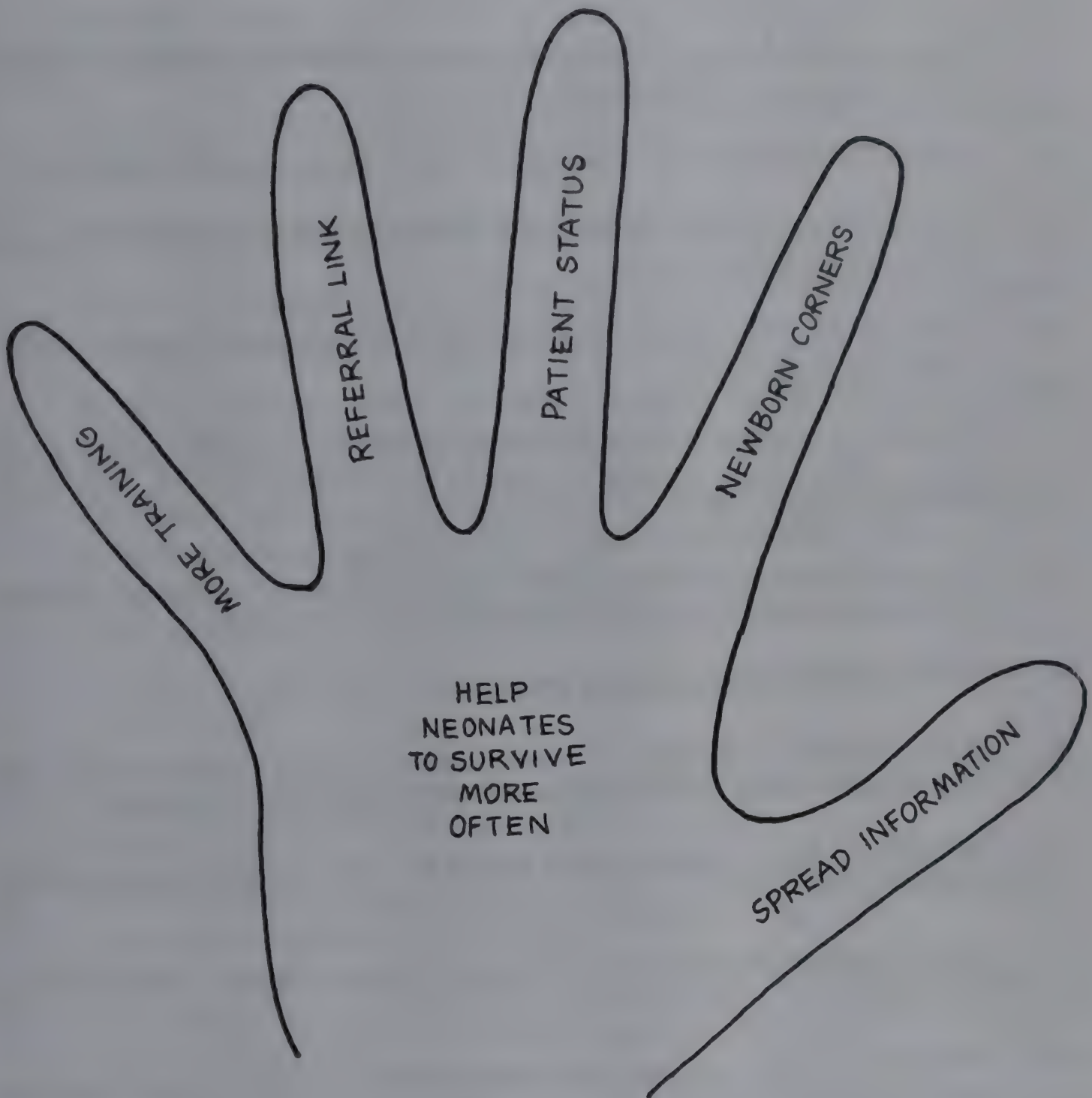


Fig.12 Tasks Ahead to Reduce NMR



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ANNEXURES

National Institute of Public Cooperation and Child Development

National Consultation Meet on Changing Pattern of Pediatric Illnesses in Next Millennium

Date : 22– 23 October, 1999
Venue : Indira Gandhi Institute of Child Health
South Hospital Complex
Dharmaram College Post
Bangalore - 560029

Programme Schedule

Day & Date	Time	Session
Friday 22.10.99	9.30 a.m. – 10.00 a.m.	: Registration/Assembly
	10.00 a.m. – 11.00 a.m.	: <i>Inaugural Session</i>
		<ul style="list-style-type: none">• Welcome Address Shri S.K. Muttoo Director, NIPCCD, New Delhi• Inaugural Address Shri A. Sengupta Secretary, Health Govt. of Karnataka, Bangalore• Introductory Remarks Dr. V.R. Pandurangi Founder Emeritus Secretary General CAMHADD, Bangalore• Introductory Remarks Dr. T. Jacob John President Indian Academy of Pediatrics• Presidential Address Dr. Chandrashekar Shetty Vice Chancellor Rajiv Gandhi University Bangalore
	11.00 a.m. – 11.15 a.m.	: Tea

Technical Session I

Chairperson : Dr. I.C. Tiwari

11.15 a.m. – 12.00 noon : Fifty Years of Pediatrics in India

- Dr. D.G. Benakappa
Director, IGICH
Bangalore

12.00 noon – 12.45 p.m. : Attainment of Child Health Targets of National Health Policy

- Dr. Dinesh Paul
Joint Director (Health)
NIPCCD
New Delhi

12.45 p.m. – 1.30 p.m. : Pediatric Infectious Diseases in the Next Millennium: Prospects of Prevention and Control

- Dr. T. Jacob John
Ex – Professor of Virology
Christian Medical College Vellore

1.30 p.m. – 2.30 p.m. : Lunch

Technical Session II

Chairperson: Dr. Shanti Ghosh

2.30 p.m. – 3.15 p.m. Tuberculosis at the Door Steps of the Next Millennium: The Epidemiological Perspective

- Dr. A.K. Chakraborty
Former Director
National Tuberculosis Institute
Bangalore

3.15 p.m. – 3.30 p.m. : Tea

- 3.30 p.m. – 4.15 p.m. : Child Care Practices including Home Remedies
- Dr. P.K. Misra
Formerly Principal
K.G's. Medical College
Lucknow
- 4.15 p.m. – 4.45 p.m. : Unmet Health Agenda with Special Reference to Children Especially in Difficult Circumstances.
- Dr. Nandini Mundkur
Chief Executive
Children's Hospital
Bangalore
- 4.45 p.m. – 5.15 p.m. : Rehabilitation Needs of Children in the Next Millennium.
- Dr. R.K. Srivastava
Additional Director General
Ministry of Health & Family Welfare
New Delhi
- Presented by Dr. J.V. Singh
Prof. of Community Medicine
KG's Medical College
Lucknow
- 5.15 p.m. – 5.45 p.m. : Presentation of Nutrition & Health Education Kit
- Dr. Dinesh Paul
Joint Director, NIPCCD
New Delhi

Technical Session III

Chairperson: Dr. P.K. Misra

Saturday 23.10.99	9.00 a.m. – 9.20 a.m.	: Additional Vaccines: Essential Need in Next Millennium's National Immunization Schedule
		▪ Dr. S.L. Mandowara Professor Deptt. of Pediatrics Medical College Udaipur
	9.20 a.m. – 9.40 a.m.	: Modifications in National Immunization Schedule
		▪ Prof. A. Parthasarthy Former Senior Professor of Pediatrics Madras Medical College Chennai
	9.40 a.m. – 10.00 a.m.	: Hepatitis B, Malaria Dengue Fever and in Children-Challenges for the Next Millennium and Concept of IMCI
		▪ Dr. Sunil Gomber Professor of Pediatrics University College of Medical Sciences, Delhi
	10.00 a.m. – 10.20 a.m.	: Slide Presentation on Child Health in Orissa
		▪ Prof. R.K. Satapathy Formerly Superintendent MKG Medical College Berhampur Orissa

Technical Session IV

Chairperson: Prof. A. Parthasarthy

10.20 a.m. – 11.00 a.m. : Capacity Building of Caring Communities
with Reference to Pediatric Priorities in
the Next Millennium

- Dr. Amitava Sen
Ex Professor & Head
Deptt. of Pediatrics
SSKM Hospital
Calcutta

11.00 a.m. 12.00 noon : Discussion on Recommendations and
Finalisation of Recommendations

Chairpersons: Dr. I.C. Tiwari
Dr. Shanti Ghosh
Rapporteur : Dr. A.K. Dutta

12.00 noon – 1.00 p.m. : Concluding Session

1.00 p.m. – 2.30 p.m. : Disbursement of TA & Lunch

2.30 p.m. – 6.30 p.m. : TRG Meeting (only for TRG members)

**National Consultation Meet on Changing Pattern of
Pediatric Illnesses in Next Millennium**

Date : 22– 23 October, 1999
Venue : Indira Gandhi Institute of Child Health
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